

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The Mining Journal is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2530.—Vol. LIV.

LONDON, SATURDAY, FEBRUARY 16, 1884.

WITH SUPPLEMENT. PRICE SIXPENCE BY POST, 21 4s. PER ANNUM

**MR. JAMES H. CROFTS, STOCK AND SHARE DEALER,**  
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.

ESTABLISHED 1842.

BUSINESS transacted in all descriptions of MINING Stocks and Shares British and Foreign, Consols, Bonds (Foreign and Colonial), Railways, Insurance, Assurance, Telegraph, Tramway, Shipping, Canal, Gas, Water, and Dock Shares, and all Miscellaneous Shares.

Every Friday a general and reliable List issued (a copy of which will be forwarded on application), containing closing prices of the week. MINES INSPECTED.  
BANKERS: CITY BANK, LONDON—SOUTH CORNHILL BANK, ST. AUSTELL. TELEPHONE NUMBER 1003.

**SPECIAL DEALINGS** in the following, or part:—  
100 Asia Minor. 100 Guinea Coast Gold. 20 Panulicillo.  
50 Akankoo, fully paid. 10 Great Laxey. 100 Prince of Wales.  
50 ditto, 17s. 6d. paid. 20 Gunnislake (Clitters). 50 Pestarens.  
100 Almada. 500 Hawk's Hill. 20 Rio Tinto.  
25 Bedford United. 50 Hingston Down. 75 Ruby.  
25 Bratsberg. 200 Hoover Hill. 30 Rhodes Reef.  
25 Bwch United. 100 Home Mines Trust. 25 Richmond.  
50 Carn Camborne. 50 Hony & Trelawny. 20 Roman Gravel.  
50 Carn Camborne. 200 Indian Consolidated. 20 South Caradon.  
50 Callao Bis. 100 Indian Glenrock. 15 South Condurrow.  
50 Chile Gold. 100 Javali. 50 South Darren.  
100 Colombian Hydraulic. 100 Kapanga. 100 South East Wynnad.  
50 Consolidated. 50 Killifreth. 50 South Devon United.  
50 California. 50 La Plata (New). 300 Sortridge (offer wtd.).  
50 Colorado. 30 Last Chance. 30 South Penstruthal.  
50 Chontales. 50 Leadhills. 50 Tambercherry.  
50 Chontales. 50 Lisbon-Berlyn. 200 Tanker, Gt. Consols.  
50 Cor. So. Austr. Cop. 80 Marke Valley. 20 Tolima A.  
75 Denver. 50 Michipicoten. 30 ditto B.  
50 Devala Moyer. 100 Mounts Bay. 100 Tresavean.  
20 Devon Consols. 200 Mysore Gold. 25 Trevaunance.  
50 Devon Friendship. 100 New Caradon. 50 United Mexican.  
50 Devon United. 50 New Callao. 50 Victoria Gold.  
10 Dolcoath. 50 New Emma. 10 Wheel Bassett.  
20 Don Pedro. 25 New Quebrada. 50 West Phoenix.  
50 Drakewalls. 50 North Blue Hills. 200 West Caradon.  
50 Duchy Peru. 20 New Kitty. 20 West Orebor.  
50 East Blue Hills. 200 Nouveau Monde. 25 West Polbreen.  
50 Eberhardt. 20 North Penstruthal. 10 West Kitty.  
50 East Caradon. 10 West West Caradon. 50 West Poldice.  
50 East Craven Moor. 100 Old Shepherds. 50 West Poldice.  
50 East Lovell. 100 Organos. 20 Wheel Coates.  
100 East Wheel Rose. 75 Orita. 25 Wheel Orebor.  
50 Ecton. 75 Orita. 75 Wheel Orebor.  
50 Flaggstaff. 50 Penrose. 75 Wheel Jane.  
50 Frongoch. 50 Penhalls. 55 Wheel Kitty.  
50 Frontino. 100 Potosi. 25 Wheel Silver & Lan-  
30 Goginan. 80 Port Phillip. 200 Wynnad Perseverance.  
100 Gold Coast. 150 Farya Copper. 200 Wynnad Perseverance.  
50 Grogwinion. 25 Phoenix United.

\*. SHARES SOLD FOR FORWARD DELIVERY (ONE, TWO, OR THREE MONTHS) ON DEPOSIT OF TWENTY PER CENT.  
\*\* SPECIAL BUSINESS AT CLOSE PRICES in all Market TIN, COPPER and LEAD SHARES.  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**RAILWAYS—SPECIAL BUSINESS.**—Fortnightly Accounts opened on receipt of the usual cover.  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**FOREIGN BONDS—SPECIAL BUSINESS.**—Fortnightly Accounts opened on receipt of the usual cover.  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**AMERICAN AND CANADIAN STOCKS AND SHARES—SPECIAL BUSINESS.**—Fortnightly Accounts opened on receipt of the usual cover.  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**GOLD AND SILVER MINES—SPECIAL BUSINESS in ALL** marketable INDIAN GOLD SHARES, and in California, Callao Bis., Gold Coast, Guinea Coast, Lisbon-Berlyn, New Callao, West Callao, Tolima A., Tolima B., La Plata, Rio Tinto, Frontino and Bolivia, Potosi, Chile, Nouveau Monde, Ruby, Richmond, Victoria.  
\* SHARES IN THE ABOVE SOLD FOR FORWARD DELIVERY ONE, TWO, OR THREE MONTHS ON DEPOSIT OF TWENTY PER CENT.  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**MISCELLANEOUS SHARES of all DESCRIPTIONS BOUGHT or SOLD—SPECIAL BUSINESS:**—Brighton Aquarium, General Credit, Hudson's Bay, Native Guano, Suez Canal, Westminster Aquarium, and Hotel Shares.  
SHARES SOLD FOR FORWARD DELIVERY, ONE, TWO, OR THREE MONTHS, ON DEPOSIT OF TWENTY PER CENT.  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**ELECTRIC LIGHT SHARES—SPECIAL BUSINESS.**  
Anglo-American. Hammond. Swan.  
Brush. Maxim-Weston.  
Shares sold for cash, account, or for forward delivery (one, two, or three months) on deposit of 20 per cent.  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**EAST WHEEL ROSE, OLD SHEPHERDS, MOUNTS BAY, TRESAVEAN, HOME MINES TRUST, DUCHY PERU.**  
SPECIAL BUSINESS in the above for cash or account.  
FOR SPECIAL SALE, FOR FORWARD DELIVERY, ONE, TWO, OR THREE MONTHS, subject to deposit of TWENTY PER CENT.—100 Duchy Peru, 200 East Wheel Rose, 200 Old Shepherds, 200 Tresavean, 200 Mounts Bay.  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.  
ESTABLISHED 1842.

**MR. W. H. BUMPUS, STOCK AND SHARE BROKER,**  
AND MINING SHARE DEALER,  
44, THREADNEEDLE STREET, LONDON, E.C.  
ESTABLISHED 1807.  
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Accounts opened for the Fortnightly Settlement.

A List of Investments free on application.  
Mr. BUMPUS has SPECIAL BUSINESS in the undermentioned:—  
75 Almada. 150 Eberhardt. 100 Old Shepherds.  
50 Asia Minor. 30 East Lovell. 50 Panulicillo.  
25 Birdseye Creek. 40 Ecton. 100 Pen-yr-Osredd.  
50 Bratsberg. 50 Frongoch. 200 Potosi.  
25 Bedford United. 50 Frontino. 100 Prince of Wales.  
100 Carn Camborne. 30 Great Holway. 10 Roman Gravel.  
20 Carn Brea. 10 Great Laxey. 70 Ruby.  
200 Chontales. 100 Home Mines Trust. 25 Richmond.  
100 Colombian. 150 Indian Consolidated. 100 South Kitty.  
130 Chile Gold. 25 Killifreth. 50 South Devon.  
40 Colorado. 120 La Plata. 50 South Caradon.  
100 California Gold. 100 Lisbon-Berlyn. 25 Trevaunance.  
150 Copago. 100 Montana. 25 Tolima B.  
50 Cook's Kitchen. 100 Monte Valley. 10 United Mexican.  
3 Dolcoath. 100 Mounts Bay. 50 West Godolphin.  
100 Devon Friendship. 60 New Callao. 20 Wheel Grenville.  
30 Drakewalls. 50 N. Trumpet Consols. 15 Wheel Bassett.  
20 Devon Consols. 35 New Kitty. 15 Wheel Pevor.  
50 Duchy Peru. 200 Nouveau Monde. 70 Wheel Coates.  
100 East Wheel Rose. 60 Organos. 40 Wheel Orebor.  
5 East Pool. 50 Orita.

N.B.—Prices of the above on application, or offers may be made. Several of shares in this list are for sale under market quotations.  
SPECIAL BUSINESS, at close prices, in the SHARES of all the principal HOME and FOREIGN MINES.  
Mr. BUMPUS devotes special attention to these Securities, and is in a position to afford reliable information and advice to intending investors and others.  
WILLIAM HENRY BUMPUS, SWORN BROKER,  
OFFICES: 44, THREADNEEDLE STREET, LONDON, E.C.  
ESTABLISHED 1807.

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BRITISH AND FOREIGN MONTHLY MINING NEWS  
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The Title Page and Index to our Eighteenth Volume are now ready, and can be obtained on application.

**MR. ALFRED E. COOKE,**  
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ESTABLISHED 1853.

MR. ALFRED E. COOKE can SELL the following shares, or portions thereof, at LOWEST CURRENT MARKET QUOTATIONS FREE OF COMMISSION.

30 Bratsberg Copper. 50 Mounts Bay. 80 South Kitty Tin.  
50 Callao Bis Gold. 50 New West Caradon. 20 South Darren Silver-  
30 Colombian Hydraulic. Copper. Lead.  
4 Dolcoath Tin. 15 New Kitty Tin. 10 South Caradon Copper  
25 Carn Camborne Tin & 50 New Caradon Copper. 15 Trevaunance.  
Copper. 100 Nouveau Monde Gold. 180 Tankerville Gt. Con.,  
40 Chontales Gold. 100 North Blue Hills. 50 Tresavean Copper &  
50 Corporation of South. 50 New Callao Gold. Tin.  
25 Cartago Gold. 60 Organos. 20 Und. Mexican Silver.  
100 Devon Friendship. 60 Orita Gold. 65 Victoria Gold.  
4 Dolcoath Tin. 50 Prince of Wales. 150 Western Andes.  
50 Duchy Peru Silver-ld. 100 Potosi Gold. 50 West Callao Gold.  
50 East Rose Lead. 100 Port Phillip Gold. 20 West Caradon Copper  
50 East Blue Hills Tin. 50 Parys Copper. 20 West Polbreen Tin.  
50 Gold Coast. 15 Richmond Silver. 50 West Goginena Cop.  
40 Home Mines Trust. 10 Roman Gravel Lead. 15 West Kitty Tin.  
50 La Plata Lead. 50 Ruby. 100 Wheel Jane Tin.  
20 Leadhills. 100 Sortridge Copper and 90 West Orebor Copper.  
40 Lisbon-Berlyn Gold. Tin.  
SPECIAL BUSINESS.—OLD SHEPHERDS, EAST ROSE, SOUTH KITTY,  
HOME MINES TRUST, NOUVEAU MONDE, VICTORIA GOLD.  
TEN PER CENT. DEPOSIT.—Many of the above shares can be sold for  
settlement by arrangement at the middle or end of March on payment of  
10 per cent. deposit. Shares not found in the above list may be purchased on  
application.

MR. ALFRED E. COOKE is a BUYER and SELLER of all Shares currently  
dealt in at CLOSEST MARKET PRICE FREE OF COMMISSION.

IMPORTANT.—In order to obtain shares at present quotations purchasers are  
strongly advised to send orders by telegraph (when possible) a PRICE LIST of  
MINE SHARES and the LEADING RAILWAY and FOREIGN STOCKS is  
issued every FRIDAY. A REPORT on the STOCK MARKETS and a GENERAL  
PRICE LIST is issued every SATURDAY. Either or both will be forwarded to  
clients on application.

ALFRED E. COOKE, 9, OLD BROAD STREET, LONDON.  
(Opposite the Stock Exchange, with which the office is in DIRECT  
TELEGRAPHIC COMMUNICATION.)  
TELEPHONE NUMBER, 1283.

**MR. JAMES STOCKER, STOCKBROKER,**  
2, CROWN COURT, THREADNEEDLE STREET, LONDON, E.C.  
Has SPECIAL BUSINESS in the following for cash or settlement by arrangement  
free of commission:—

100 Akankoo. 80 East Rose. 80 Potosi.  
25 Bedford United. 40 Frontino. 25 Polbreen.  
100 Birdseye. 25 Great Laxey. 30 Richmond.  
50 Bratsberg. 60 Home Mines. 50 South Caradon.  
90 Californian. 30 Kapanga. 25 South Darren.  
50 Callao Bis. 30 Killifreth. 70 Tresavean.  
25 Carn Camborne. 150 Kohinor B. 20 Trevaunance.  
70 Chile Gold. 50 La Plata. 50 Transvaal Gold.  
80 Chontales. 200 Last Chance. 15 Tolima A.  
30 Clitters. 50 Leadhills. 50 Tamar.  
75 Colombian. 50 Lisbon-Berlyn. 30 United Mexican.  
50 Colorado. 100 Mounts Bay. 15 Van.  
30 Cor. So. Austr. Cop. 50 New Emma. 100 Victoria Gold.  
50 Devon Friendship. 60 New West Caradon. 20 West Callao.  
15 Devon Consols. 100 Nouveau Monde. 55 West Orebor.  
100 Denver. 80 Old Shepherds. 20 West Kitty.  
45 Duchy Peru. 60 Orita. 20 West Polbreen.  
55 Ecton. 65 Organos. 25 Wheel Orebor.  
50 East Blue Hills. 45 Prince of Wales. 10 Yorke Preference.  
Railways, Foreign Bonds, Gold and Silver Mines, Miscellaneous Shares, and  
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BANKERS: CITY BANK, Threadneedle-street, E.C.

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IN TWO WEEKS.  
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IN TWO WEEKS.  
Buyers of OLD SHEPHERDS Shares have made these fabulous profits in  
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**JOHN BISLEY, STOCK AND SHARE BROKER,**  
AND MINING SHARE DEALER,  
38, CORNHILL, LONDON, E.C.  
ESTABLISHED 1860.

BANKERS: LONDON AND WESTMINSTER, Lothbury, E.C.

**JOHN B. REYNOLDS, STOCK AND SHARE DEALER,**  
37, WALBROOK, LONDON, E.C.  
Established Twenty-five Years.  
BANKERS: LONDON JOINT-STOCK.

Mr. REYNOLDS refers to his remarks on page 185.

**Messrs. H. HALFORD AND CO.,**  
STOCK AND SHARE BROKERS  
2, ROYAL EXCHANGE AVENUE, E.C.  
Have BUSINESS in ECTON COMPANY SHARES.  
SELLERS are requested to communicate with the above.

**FERDINAND R. KIRK, STOCKBROKER,**  
5, BIRCHIN LANE, LONDON, E.C.

SPECIAL BUSINESS in the following:—  
40 Asia Minor. 80 East Wheel Rose. 100 Old Shepherds.  
50 Bratsberg. 50 Eberhardt. 20 Polrose.  
50 Carn Camborne. 40 Frongoch. 40 South Caradon.  
150 Chontales. 50 Goginan. 30 Tolima A. Gold.  
200 Devon Friendship. 90 Home Mines Trust. 90 Victoria Gold.  
60 Duchy Peru. 40 Montana. 40 Wheel Orebor.

Fortnightly accounts opened in Home Railways, Foreign Bonds, American  
and Canadian Railways, on receipt of the usual cover.  
A further advance has been established in Old Shepherds, United Mexican,  
and Wheel Orebor. Shares bought and sold at close prices.  
Shares in the following are now wanted, and offers will be entertained:—  
Home Mines Trust, Tresavean, East Wheel Rose, Bratsberg, and Wheel Orebor.  
BANKERS: LONDON AND WESTMINSTER, Lothbury.

BANKERS: LONDON AND WESTMINSTER, Lothbury.

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**MR. ALFRED THOMAS,**  
MINING ENGINEER, AND STOCK AND SHARE DEALER,  
19, COLEMAN STREET, LONDON, E.C.

**MR. J. GRANT MACLEAN,**  
SHAREBROKER AND IRONBROKER, STERLING, N.B.  
Refers to his Share Market Report on page 183 of to-day's Journal.

**MR. E. J. BARTLETT, STOCK AND SHARE DEALER,**  
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Selected List of Investments post free on application.  
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**Messrs. ENDEAN AND CO., STOCK AND SHARE**  
DEALERS, 85, GRACECHURCH STREET, LONDON, E.C.  
ESTABLISHED 1862.  
BANKERS: LONDON AND WESTMINSTER, Lothbury, E.C.

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Deals in all descriptions of STOCKS and SHARES at close market prices.

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selves of this medium should send in their instructions by return of post so  
that they may be inserted.  
Circular sent post free on application.

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LONDON, E.C.

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Those who wish to buy or sell mining shares should consult Mr. JAMES. Mr. J.  
devotes his entire attention to home and foreign mines, and places his special  
information at the disposal of his clients. That mining offers undoubted advan-  
tages for quick returns no one can deny. Look at the enormous sums of money  
paid in dividends by home and foreign mines. A large number of wealthy  
families owe their present proud positions to adventuring in LEGITIMATE  
MINES. With a better price for metals many of the smaller priced shares  
would immediately advance some hundreds per cent. Mines inspected and re-  
ported upon by thoroughly competent agents.  
There are many mines worth attention, as proceedings of recent share-  
holders' meetings prove beyond doubt. During the last 40 years there has  
been no such opportunity presented itself as the present for investment in British mines.  
Metals are certain to advance. In well-informed circles no doubt is entertained  
on this point. Buyers must not further delay orders.  
See Selected List published by S. JAMES, 14, Angel-court, London, E.C.

SPECIAL BUSINESS in the following or part:—

20 Bedford United. 50 North Penstruthal. 50 Bratsberg.  
25 Blue Hills. 100 Old Shepherds. 50 Californian Gold.  
20 Carn Camborne. 20 Phoenix United. 100 Canadian Copper.  
10 Carn Brea. 25 Penhalls. 50 Callao Bis.  
10 Cook's Kitchen. 45 Prince of Wales. 10 Chile.  
30 Collicombe Consols. 50 Parys Copper. 45 Chontales.  
100 O'Connell. 50 South Caradon. 150 Colombian Hydraulic.  
100 D'Ersey Mountain. 20 South Condurrow. 100 Co. So. Austr. Cop.  
10 Devon Consols. 20 South Darren. 20 Don Pedro.  
100 Devon Friendship. 25 South Devon United. 40 Eberhardt.  
30 Devon United. 10 South Frances. 20 Flagstaff District.  
50 Drakewalls. 10 South Phoenix, 10s. 100 Frontino.  
5 Dolcoath. paid. 10 Gold Coast.  
20 East Blue Hills. 50 Tamar. 40 Hoover Hill.  
10 East Botallack. 10 Tincroft. 100 Indian Consolidated.  
50 East Caradon. 70 Tresavean. 200 Indian Glenrock.  
100 East Wheel Rose. 150 Tanker, Gt. Consols. 50 Kohinor B.  
40 Frongoch. 25 Trevaunance. 100 Kapanga.  
30 Goginan. 10 West Bassett. 120 La Plata New Shares.  
20 Great Laxey. 75 West Caradon. 40 New Emma.  
10 Gunnislake Clitters. 50 West Orebor. 40 Nouveau Monde.  
20 Great Holway. 50 W. Devon Gt. Consols. 40 Organos.  
50 Grogwinion. 40 West Goginena. 80 Orita.  
100 Home Mines Trust. 30 West Poldice. 100 Potosi.  
20 Killifreth. 50 Wheel Bassett. 15 Port Phillip.  
25 Kit Hill Gt. Consols. 50 Wheel Coates. 500 Pierrefitte Ord.  
50 Kitty St. Agnes. 20 Wheel Orebor. 30 Ruby & Dunderberg.  
50 Mounts Bay Consols. 5 Wheel Pevor. 25 Tocopilla.  
40 North Bury. 100 Asia Minor. 25 Tambercherry.  
50 New Caradon. 21 Almada & Tinto. 45 Victoria Gold.  
25 Birdseye Creek. 25 Birdseye Creek. 50 Wynnad Persev.

\*. S. JAMES is a Buyer or Seller of any of the above Shares.  
To save extra correspondence, and to prevent disappointment, buyers will  
please state the best price they will give, and sellers the lowest price they will  
accept, subject to reply by wire or return of post, whichever preferred.  
Orders by letter or telegram promptly attended to. Speculative accounts not  
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## MINING PROGRESS IN CANADA.

Although as compared with other dependencies of the British Crown capitalists have given very little assistance to Canada there can be no question that every province of the Dominion possesses mineral resources which are well worth their attention. With regard to the Eastern provinces it is a fact that there is an abundance of good iron ore, hematite, on the Cobequid Mountains at Acadia Mines, Nova Scotia, where the Canada Steel Company has located works giving employment to 500 men. The output of ore last year was 50,000 tons, which was made into pig and bar iron, car wheels, &c., valued at over \$600,000. Iron ore is found in other localities, but not to any such extent as here. The largest colliery in Canada is at Spring Hill Mines, N.S., where about 500 men are employed, and the output last year amounted to 200,300 tons of coal, or nearly one-sixth of the entire production of Nova Scotia. At Stellarton, N.S., 141,000 tons of coal were raised last year, and 12,512 tons of coke manufactured. At Sydney, Cape Breton, the coal fields underlie over 200 square miles, the greater part of which is under the Atlantic. Mining rights covering over one-half of this submarine coal have been taken out. The Sydney Mines give employment to about 15,000 men, and coal is seen, smelted, and felt everywhere. At Pictou, N.S., coal has been exported since 1798, though the amount was small till 1829. It is now the principal business of the port. At Bridgeport, C.B., the International Coal Mines give employment to 300 men and boys, and the output for last year was 109,286 tons. At the Joggins Mines, N.S., an attempt has been made to obtain railway facilities from Macan on the Intercolonial Railway, so that the coal now mined there may find a more ready market. The famous Albertite coal that was obtained from the Albert Mines, New Brunswick, for several years has become exhausted, and mining has been discontinued.

The Nova Scotian gold mines appear to be yielding excellent returns, considering the small amount of money and labour that is being expended upon them. At Mount Uniacke there are three gold mines and four quartz mills; 3440 tons of quartz were crushed, furnishing 9128 days' employment, and yielding \$352 per day per man. This was the best return of any mine in the province. At Sherbrooke the ore is low grade, but easily worked, and distributed in large quantities over an area of 18 square miles. The yield of six quartz mills last year was 2572 ozs. 17 dwts. 14 grs. At Golden-ville, three miles from Sherbrooke, \$500 was found the day the mines were discovered in 1861, and there has been a yield of \$2000 per man, per year, during some years. At Tangier the yield last year was 789 ozs. from 1622 tons of ore. At Waverly the yield was 234 ozs. 7 dwts. 5 grs., from 554 tons of ore, three mines having been worked and 2238 days' labour performed. At Wine Harbour the ore is easily worked, but poor, yielding only 94 cents per day per man. At Country Harbour 903 ozs. were obtained last year from 511 tons of quartz, and the Oxford Gold Mining Company, of Chezzetcook, obtained \$6800 from 130 tons of ore worked during 12 days in May, 1882.

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The nature of the phosphate deposits and the question, Will Deep Mining Pay? are ably discussed by Mr. Henry G. Vennor, F.G.S., in the last number of the Canadian Mining Review. He states "that in the present active state of phosphate mining and general enquiry concerning our mines, it will be of interest to consider briefly the conditions of the deposits, and more particularly what evidence there is of these being deep-seated. I have elsewhere stated—and often more than once—that the apatite rocks were, geologically considered, superficial. Hence the query naturally arises, Will Deep Mining Pay? This question is an important one at the present time when so much capital is being invested in mines and mining properties, but, in so far as I have seen, no answer of a satisfactory nature has yet been given. The question, however, is a simple one, when we look into the nature of the deposits—i.e., their geological conditions. The miner, who hitherto has been at work at economic ores in true fissure veins cutting alike all the rocks of a particular mining district, is entirely at sea when he is placed in the phosphate field. He may talk as he pleases about being on or off the main lode, but of one thing only he is really certain and that is of being supremely puzzled. Tell him to search in the direction of the bedding and he will laugh you to scorn and inform you that true veins but rarely run so. Yet, such is the truth—the very truth—in the case of phosphate deposits. These are nothing more than a series of irregular (large and small) masses distributed along one or two planes of bedding in one particular belt of rock. Leave this particular belt and you lose your phosphate; follow it and you continue to discover new deposits. This is only natural, of course, and is the case with iron ore and similar deposits, true veins occur as spurts or infiltrations

from these embedded masses, but only run for very limited distances. The very finding, however, of one or two of such veins is enough for the embryo mineralogist and geologist, and he hastens to set it down as an established fact.

Many British capitalists being interested in Lake Superior mines it is gratifying to find that fair progress is being made. The Canadian Mining Review states that at Silver Islet about 50 miners are employed, a depth of 1200 ft. has been reached, and on the 1160 ft. level they are drifting both ways. The mine is said to be yielding silver in paying quantities. This company owns a large tract of land on the main shore at Mamaine, which has been successfully prospected, and native copper, yellow and gray copper ores in veins have been discovered, as well as native silver, said to be very rich. On the property adjoining this last mentioned location, the Lake Superior Native Copper Company are expending about \$12,000 per month, and employ 175 men. A shaft has been sunk 200 ft., and in one of three levels they have drifted 600 ft. The ore at the depth obtained carries about 3 per cent. of metal. The Michipicoten Native Copper Company are doing good work at their mine, to the north-west of the Lake Superior Native Copper Company's property, and it is said they have struck ore rich in native copper. Both of these mines are being worked by English capital. Within 25 miles of Port Arthur the Rabbit Mountain Silver Mine is located, and of this property much has already been read in the Canadian press. Nuggets of black silver, weighing as much as 12 lbs. each, have been taken from the vein, through which silver appears well disseminated. The vein is unquestionably a large one, and a large quantity of silver is in sight. The Rabbit Mountain District is eminently a silver-bearing country, and it has, as yet been but partially explored. To the north and west of Rabbit Mountain, around Lakes Shebandowan, Kasabowia, and north of Lac des Mille Lacs, sufficient prospecting has been done to prove it to be a gold-bearing district. Free gold has been found here, and some of the quartz taken from a vein near Partridge Lake yielded \$30 to the ton. To the west of Lake Shebandowan the Huronian Company's gold and silver mines located, near Jack Fish Lake, and it may be said that this is one of the richest mines at which work has been done, that has yet been discovered in the Lake Superior region, and it is satisfactory to know that it is being actively and carefully developed by a strong Canadian company. The vein, which is a large one, is rich in mineral, and is free milling, a shaft is down 50 ft., and a drift of as many feet has been run on the vein, from which a large quantity of rich ore has been raised. The company have a 10-stamp mill and four free vanners ready to begin work on the ore, and it will not be long before the result of milling will be made known. It is a certainty that the Lake Superior district is rich in mineral, and when capital is available for the proper development of the mines their yielding capacity will be demonstrated, but not till then.

With regard to the source of the alluvial gold of the North-West Territories it is remarked that it has long been known that alluvial gold is found in the North-West Territories on the rivers flowing eastward from the Rocky Mountains. The Peace river and the North Saskatchewan have been especially noted in this connection. Now that the precious metals have been discovered in small quantities in the Rocky Mountains, near the proposed route of the Canadian Pacific Railway, the question is again asked, may not the gold of the Saskatchewan have been washed down the rivers from the mountains? This was the original popular theory, until many years ago, when Prof. Bell, of the Geological Survey, showed that it was much more probable that the gold came from the northward than the west. This opinion has since been quoted by Prof. Hind and Dr. Selwyn.

The gold, as Dr. Bell showed, is washed out of the drift which covers the auriferous strata of the plains, and as this drift came from the northward (as proved by its composition) it follows that the gold came from this quarter also. In the report referred to it was supposed that the gold might have been derived from Huronian rocks in the direction of Lake Athabasca, and since that time these rocks have actually been found to be well developed on this lake; but, although some of the alluvial gold of the plains may have had its source in this direction, Prof. Bell is of the opinion that it is quite as likely that the gold of the North Saskatchewan has been brought by the ancient glaciers from the valleys of the upper part of the Liard River and the northern branches of the Peace river. The reason why the gold is not found much above Edmonton is owing partly to the slope of the ground, and partly to the smaller glaciers of the drift period in that latitude proceeding eastward from the Rocky Mountains, keeping the great glaciers from the northward from approaching any nearer to the mountains.

The most reliable assays of ores from the recent discoveries in the Rocky Mountains, above referred to, show but little gold, and even if more should prove to exist the locality is too far south for any of it to have found its way into the North Saskatchewan, at the sources of which no gold has yet been found. On the other hand, it is well known that rich placers exist on the upper branches of the Liard and large quantities of gold have already been taken from them, especially in the Cassiar district. It, therefore, appears to us that Prof. Bell's explanation accounts best for all the facts.

The reports of the Select Standing Committee on Immigration and Colonisation of last session, which has lately been published, contains much valuable information on the country around Hudson's Bay. In his evidence, Prof. Bell, of the Geological Survey, says in answer to a question by Capt. Scott, of Winnipeg:—"In a general way, in the Hudson's Bay Territories are there many useful minerals?" "As far as we know there are, but very little search has been made. I can, however mention numerous metals which are already known to exist. They embrace iron, as hematite, magnetite, clay ironstone, and rich manganese iron ore on the Eastmain coast, copper in the native state, and in various combinations, lead, silver, gold, molybdenum, antimony, manganese, chromium, phosphate of lime, jade, chrysophase, agate, cornelian, malachite, jasper, serpentine, jet, lazulite, petroleum, asphalt, peat, anthracite, bituminous coal, lignite, limestone, granite, sandstone, and sand for glass-making, moulding sand, clays, marls, ochres, gypsum, iron pyrites, salt, medicinal waters, sheet mica, soapstone, and plumbago. These are all known to occur, many in various parts of the Territory, and most of them certainly well worth looking after. Sir John Richardson mentioned that he thought it would be to the advantage of the Imperial Government and the Hudson's Bay Company to explore the country for minerals. He was convinced that it would not be long before the value of the mines of the Hudson's Bay Territory would far surpass that of the fur trade."

EPPE'S COCOA—GRATEFUL AND COMFORTING.—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Eppe has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly nourished frame.—Civil Service Gazette.—Made simply with boiling water or milk. Sold only in packets, labelled 'JAMES EPPE and Co., Homoeopathic Chemists, London.'—Also makers of Eppe's Chocolate Essence.

This Property will command a practical monopoly of the Coal Trade of the Danube, Black Sea, and Constantinople. Income from Contracts offered will amount to £30,000 per annum, equal to over 30 per cent. on the total Capital of the Company after payment of the Government royalty. A further offer has been received to take the whole production of Coal at a clear profit of 10s. per ton.

## The Iron Gate Coal and Chrome Company, Limited.

Incorporated under the Companies Acts, 1862 to 1880, whereby the Liability of Shareholders is limited to the amount of their Shares.

CAPITAL £100,000, IN 100,000 SHARES OF £1 EACH,

Of which 20,000 are taken by the Vendor in part payment of the purchase-money, and the first issue of 50,000 are now offered for subscription, payable:—5s. per Share on Application, 5s. per Share on Allotment, and the balance, as and when required, in Calls of 5s. per Share, at intervals of not less than three months.

In the event of no Allotment being made, the amount payable on Application for Shares will be returned in full.

### DIRECTORS.

Sir GEORGE INNES, Bart., Richmond, Surrey.  
JAMES CROSTON, Esq., J.P., Manchester, and Upton Hall, Cheshire.  
Mr. Alderman JENKINS, Higher Broughton, Manchester.  
T. SAUNDERS, Esq., J.P., Holland Road, Kensington, W.  
Mr. Councillor HUGO SHAW, Manchester.  
THOMAS OLDHAM, Esq., Holmefield, Sale, Manchester.

SOLICITOR—J. H. BOARDMAN, Esq., 41, John Dalton Street, Manchester.

BANKERS—THE UNION BANK OF MANCHESTER AND BRANCHES.

(Messrs. GLYN, MILLS, and CO., London Agents.)

AUDITORS—Messrs. JOHN ADAMSON, SON, and CO., Norfolk Street, Manchester.

SECRETARY (pro tem.)—Mr. F. W. DAWSON.

REGISTERED OFFICES—9, CORPORATION STREET, MANCHESTER.

### ABRIDGED PROSPECTUS.

This company is formed for the purchase of concessions granted by the Crown of Hungary, of the mining rights in perpetuity over a district of about 25 square miles in extent, situate on the Danube at Tisovitz and Eibenthal, near the well-known city of Orsova, together with the freehold land at Tisovitz, and the works, houses, offices, and landing stages erected thereon, and the plant and machinery appertaining thereto, and for working the extensive and valuable deposits of coal and chrome thereon.

COAL.—This property has been inspected and favourably reported upon by some of the most eminent authorities—namely, Prof. Hull, F.R.S., F.G.S., Director of the Government Geological Survey of Ireland, and previously Government Inspector of Mines in Lancashire, Prof. V. Ball, F.R.S., F.G.S., Director of the Government Geological Survey of India, and Commissioner at the Vienna Exhibition, 1873, Nelson Boyd, Esq., F.G.S., M.E., J. E. Wood, Esq., C.E., F.R.S., Luke Blackwell, Esq., M.E., and others, who state that the coal on this property resembles both in appearance and quality the South Wales steam coal, being peculiarly adapted for use in locomotives, and for steam navigation, a fact that is proved by analysis.

The coal seams are vertical, or nearly so, and crop out on the flanks of the hills, and can be worked by adits, without machinery, for raising or draining. Four of the seams are already proved, and opened out by adit levels. These seams vary in thickness from 4 ft. to 20 ft., and the quality is excellent. Another seam 48 ft. in thickness, is stated to have been discovered, and others are known to exist. It is computed that these seams contain over 100,000,000 tons of workable coal, free from gas or water.

These collieries, being the nearest cheap source of supply for vessels navigating, and towns upon the Lower Danube, Black Sea, and Constantinople, will have the whole trade open to them, and no English coal can possibly compete on account of freight and charges, which to Galatz amount to 15s. to 20s. per ton, whilst it is estimated

the total cost to this company for coal delivered free on board will not be more than 5s. per ton. The selling price of steam coal at Galatz is stated to be about 39s. per ton, and for native coal further up the river 21s. to 33s. per ton. The supply from the collieries can easily be made equal to 2000 tons per week, and deliveries commenced forthwith.

The directors have already received an offer of contract for 20,000 tons of this coal per annum, for three years, with a clear profit to the company of 10s. per ton. A further offer has been received to take all the coal that can be delivered at the same rate of profit.

The chrome ore crops out on the surface, and can be worked in open quarry, and the simple process of hand-picking would suffice to ensure a large immediate delivery, very little capital being required except for actual wages. The inspecting engineers concur in stating that the chrome ore can be delivered on the Danube, free on board at 5s. to 6s. per ton. A firm contract is already offered for 10,000 tons per annum, for three years, with a clear profit to the company of £2 per ton.

The demand for coal on the Danube, and for chrome in England, America, and on the Continent being continuous and increasing, and the sources of supply of the latter being few, a ready sale at highly remunerative rates may be always relied upon for a much larger output.

The purchase money agreed to be paid for the estate and mineral rights is £60,000, to be paid or satisfied as follows, viz., £16,000 in cash, £20,000 in fully paid-up shares, and the balance in coal and chrome from the property.

Copies of the reports, memorandum, and Articles of Association, can be seen at the offices of the company's solicitor. Prospectuses and forms of application for shares may be obtained from the solicitor, auditors, the bankers, and also at the offices of the company



By way of explanation of the diagram, details are given as to how the ore was crushed, and any necessary remarks are added. The several curves are, it will be noticed, represented by fig. res:—6, hard mortar, no sifting, very hard quartz, Redwing; 10, dry, hard mortar, sifted each two blows, quartz, Redwing; 1, dry, stamps, V. torine Mine, Austin, Nevada, silver ore; 2, wet, stamps, San Juan del Rey, Brazil, quartz, Phillips; 3, wet, stamps, Minas Nuevas, Alamos, Mex., silver ore, porphyritic; 4, dry, stamps, Minas Nuevas, Alamos, Mex., silver ore, porphyritic; 5, wet, stamps, Virginia City



## MINING PROGRESS IN CANADA.

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from these embedded masses, but only run for very limited distances. The very finding, however, of one or two of such veins is enough for the embryo mineralogist and geologist, and he hastens to set it down as an established fact.

Many British capitalists being interested in Lake Superior mines it is gratifying to find that fair progress is being made. The Canadian Mining Review states that at Silver Islet about 50 miners are employed, a depth of 1200 ft. has been reached, and on the 1160 ft. level they are drifting both ways. The mine is said to be yielding silver in paying quantities. This company owns a large tract of land on the main shore at Mamainse, which has been successfully prospected, and native copper, yellow and gray copper ores in veins have been discovered, as well as native silver, said to be very rich. On the property adjoining this last mentioned location, the Lake Superior Native Copper Company are expending about \$12,000 per month, and employ 175 men. A shaft has been sunk 200 ft., and in one of three levels they have drifted 600 ft. The ore at the depth obtained carries about 3 per cent. of metal. The Michipicoten Native Copper Company are doing good work at their mine, to the north-west of the Lake Superior Native Copper Company's property, and it is said they have struck ore rich in native copper. Both of these mines are being worked by English capital. Within 25 miles of Port Arthur the Rabbit Mountain Silver Mine is located, and of this property much has already been read in the Canadian press. Nuggets of black silver, weighing as much as 12 lbs. each, have been taken from the vein, through which silver appears well disseminated. The vein is unquestionably a large one, and a large quantity of silver is in sight. The Rabbit Mountain District is eminently a silver-bearing country, and it has, as yet been but partially explored. To the north and west of Rabbit Mountain, around Lakes Shebandowan, Kashabowie, and north of Lac des Mille Lacs, sufficient prospecting has been done to prove it to be a gold-bearing district. Free gold has been found here, and some of the quartz taken from a vein near Partridge Lake yielded \$30 to the ton. To the west of Lake Shebandowan the Huronian Company's gold and silver mine is located, near Jack Fish Lake, and it may be said that this is one of the richest mines at which work has been done, that has yet been discovered in the Lake Superior region, and it is satisfactory to know that it is being actively and carefully developed by a strong Canadian company. The vein, which is a large one, is rich in mineral, and is free milling, a shaft is down 50 ft., and a drift of as many feet has been run on the vein, from which a large quantity of rich ore has been raised. The company have a 10-stamp mill and four Fruevanners ready to begin work on the ore, and it will not be long before the result of milling will be made known. It is a certainty that the Lake Superior district is rich in mineral, and when capital is available for the proper development of the mines their yielding capacity will be demonstrated, but not till then.

With regard to the source of the alluvial gold of the North-West Territories it is remarked that it has long been known that alluvial gold is found in the North-West Territories on the rivers flowing eastward from the Rocky Mountains. The Peace river and the North Saskatchewan have been especially noted in this connection. Now that the precious metals have been discovered in small quantities in the Rocky Mountains, near the proposed route of the Canadian Pacific Railway, the question is again asked, may not the gold of the Saskatchewan have been washed down the rivers from the mountains? This was the original popular theory, until many years ago, when Prof. Bell, of the Geological Survey, showed that it was much more probable that the gold came from the northward than the west. This opinion has since been quoted by Prof. Hind and Dr. Selwyn.

The gold, as Dr. Bell showed, is washed out of the drift which covers the auriferous strata of the plains, and as this drift came from the northward (as proved by its composition) it follows that the gold came from this quarter also. In the report referred to it was supposed that the gold might have been derived from Huronian rocks in the direction of Lake Athabasca, and since that time these rocks have actually been found to be well developed on this lake; but, although some of the alluvial gold of the plains may have had its source in this direction, Prof. Bell is of the opinion that it is quite as likely that the gold of the North Saskatchewan has been brought by the ancient glaciers from the valleys of the upper part of the Liard River and the northern branches of the Peace river. The reason why the gold is not found much above Edmonton is owing partly to the slope of the ground, and partly to the smaller glaciers of the drift period in that latitude proceeding eastward from the Rocky Mountains, keeping the great glaciers from the northward from approaching any nearer to the mountains.

The most reliable assays of ores from the recent discoveries in the Rocky Mountains, above referred to, show but little gold, and even if more should prove to exist the locality is too far south for any of it to have found its way into the North Saskatchewan, at the sources of which no gold has yet been found. On the other hand, it is well known that rich placers exist on the upper branches of the Liard and large quantities of gold have already been taken from them, especially in the Cassiar district. It, therefore, appears to us that Prof. Bell's explanation accounts best for all the facts.

The reports of the Select Standing Committee on Immigration and Colonisation of last session, which has lately been published, contains much valuable information on the country around Hudson's Bay. In his evidence, Prof. Bell, of the Geological Survey, says in answer to a question by Capt. Scott, of Winnipeg:—"In a general way, in the Hudson's Bay Territories there are many useful minerals." "As far as we know there are, but very little search has been made. I can, however mention numerous metals which are already known to exist. They embrace iron, as hematite, magnetite, clay ironstone, and rich manganiferous iron ore on the Eastmain coast, copper in the native state, and in various combinations, lead, silver, gold, molybdenum, antimony, manganese, chromium, phosphate of lime, jade, chrysophase, agate, cornelian, malachite, jasper, serpentine, jet, lazulite, petroleum, asphalt, peat, anthracite, bituminous coal, lignite, limestone, granite, sandstone, and sand for glass-making, moulding sand, clays, marls, ochres, gypsum, iron pyrites, salt, medicinal waters, sheet mica, soapstone, and plumbago. These are all known to occur, many in various parts of the Territory, and most of them certainly well worth looking after. Sir John Richardson mentioned that he thought it would be to the advantage of the Imperial Government and the Hudson's Bay Company to explore the country for minerals. He was convinced that it would not be long before the value of the mines of the Hudson's Bay Territory would far surpass that of the fur trade."

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Incorporated under the Companies Acts, 1862 to 1880, whereby the liability of Shareholders is limited to the amount of their Shares.

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REGISTERED OFFICES—9, CORPORATION STREET, MANCHESTER.

### ABRIDGED PROSPECTUS.

This company is formed for the purchase of concessions granted by the Crown of Hungary, of the mining rights in perpetuity over a district of about 25 square miles in extent, situate on the Danube at Tisovitz and Eibenthal, near the well-known city of Orsova, together with the freehold land at Tisovitz, and the works, houses, offices, and landing stages erected thereon, and the plant and machinery appertaining thereto, and for working the extensive and valuable deposits of coal and chrome thereon.

COAL.—This property has been inspected and favourably reported upon by some of the most eminent authorities—namely, Prof. Hull, F.R.S., F.G.S., Director of the Government Geological Survey of Ireland, and previously Government Inspector of Mines in Lancashire, Prof. V. Ball, F.R.S., F.G.S., Director of the Government Geological Survey of India, and Commissioner at the Vienna Exhibition, 1873, Nelson Boyd, Esq., F.G.S., M.E., J. E. Wood, Esq., C.E., F.R.S., Luke Blackwell, Esq., M.E., and others, who state that the coal on this property resembles both in appearance and quality the South Wales steam coal, being peculiarly adapted for use in locomotives, and for steam navigation, a fact that is proved by analysis.

The coal seams are vertical, or nearly so, and crop out on the flanks of the hills, and can be worked by adits, without machinery, for raising or draining. Four of the seams are already proved, and opened out by adit levels. These seams vary in thickness from 4 ft. to 20 ft., and the quality is excellent. Another seam 48 ft. in thickness, is stated to have been discovered, and others are known to exist. It is computed that these seams contain over 100,000,000 tons of workable coal, free from gas or water.

These collieries, being the nearest cheap source of supply for vessels navigating, and towns upon the Lower Danube, Black Sea, and Constantinople, will have the whole-trade open to them, and no English coal can possibly compete on account of freight and charges, which to Galatz amount to 15s. to 20s. per ton, whilst it is estimated

the total cost to this company for coal delivered free on board will not be more than 5s. per ton. The selling price of steam coal at Galatz is stated to be about 39s. per ton, and for native coal further up the river 21s. to 33s. per ton. The supply from the collieries can easily be made equal to 2000 tons per week, and deliveries commenced forthwith.

The directors have already received an offer of contract for 20,000 tons of this coal per annum, for three years, with a clear profit to the company of 10s. per ton. A further offer has been received to take all the coal that can be delivered at the same rate of profit.

The chrome ore crops out on the surface, and can be worked in open quarry, and the simple process of hand-picking would suffice to ensure a large immediate delivery, very little capital being required except for actual wages. The inspecting engineers concur in stating that the chrome ore can be delivered on the Danube, free on board at 5s. to 6s. per ton. A firm contract is already offered for 10,000 tons per annum, for three years, with a clear profit to the company of £2 per ton.

The demand for coal on the Danube, and for chrome in England, America, and on the Continent being continuous and increasing, and the sources of supply of the latter being few, a ready sale at highly remunerative rates may be always relied upon for a much larger output.

The purchase money agreed to be paid for the estate and mineral rights is £60,000, to be paid or satisfied as follows, viz., £16,000 in cash, £20,000 in fully paid-up shares, and the balance in coal and chrome from the property.

Copies of the reports, memorandum, and Articles of Association, can be seen at the offices of the company's solicitor. Prospectuses and forms of application for shares may be obtained from the solicitor, auditors, the bankers, and also at the offices of the company



By way of explanation of the diagram, details are given as to how the ore was crushed, and any necessary remarks are added. Several curves are, it will be noticed, represented by figures:—6, 6, hand mortar, no sitting, very hard quartz, Redwing; 10, dry, hand mortar, sifted each two blows, quartz, Redwing; 1, dry, stamps, V. E. torine Mine, Austin, Nevada, silver ore; 2, wet, stamps, San Jose del Rey, Brazil, quartz, Phillips; 3, wet, stamps, Minas Nuevas, Alamos, Mex., silver ore, porphyritic; 4, dry, stamps, Minas Nuevas, Alamos, Mex., silver ore, porphyritic; 5, wet, stamps, Virginia



Nevada, average pulp; 7, wet, stamps, N. Y. Hill Mine, Grass Valley, Cal., quartz; 8, dry, Dodge crusher, Knox Mine, Mokelumne Hill, Cal., quartz; 9, wet, stamps, Porter Mine, Calaveras Co., Cal., quartz, silver ore; 11, dry, Krom rolls, Geddes and Bertrand mill, Nevada, silver ore; 12, dry, Dodge crusher, Redwing, Murphy's, Calaveras Co., Cal., quartz; 13, dry, Dodge crusher, Knox Mine, Calaveras Co., Cal., quartz; 14, dry, Tustin pulveriser, Redwing, very hard, tough quartz; 15, wet, stamps, Redwing, very hard, tough quartz; 16, ideal quartz. It will be at once observed that all stamp mill curves are convex towards the origin of co-ordinates, while roller mill curves are concave. The very remarkable curve, No. 14, with its small percentage of slimes, was obtained from an exceedingly hard, tough quartz, carrying about 1 per cent. of grey copper ore. The ore was broken to 1½ in. in a rock breaker, dried, and passed through the Tustin pulveriser, which may briefly be described as an annular ring, 18 in. by 48 in. diameter, slatted with ½ in. by 12 in. slats, and 18 in. by 48 in. inside an external screen, and two loose rollers of cast-iron, one 15 in. by 18 in. diameter, and the other 18 ft. long by 20 in. diameter, which rest inside of the ring. The rollers serve to crush the ore by their weight and the rotation of the ring, the peripheral speed being 5 ft. per second. The construction is such that the crushed ore is nearly all removed at each revolution, as about ten times as much available screen surface is allowed in the machine as compared with that of a wet-stamp mill. One of the essentials of a good mill—a prompt removal of the crushed ore is well carried out; the other essential that the blow must be proportional to the work is a compromise, and is perhaps as good as can be obtained where the ore is all reduced in the same machine. Compare this curve with No. 15, representing work on the same ore and screen, but crushed in a wet stamp-mill. About 50 per cent. more of ore finer than 100 mesh is obtained; the extreme hardness of the quartz and the very brittle nature of the mineral made it impossible to concentrate the ore when wet crushed, the tetrahedrite floating away with the battery water. Curves 6 and 10 are from the same ore, the experiment being made to see what difference would be made in crushing a small piece of quartz with and without sifting. With the exception of No. 2 all the samples were taken by the writer.

The Dodge machine offers an abundance of screen surface for the escape of the ore, perhaps more even than the Tustin; but it employs cobbles or hard lumps of the same ore to reduce the fragments which have passed a closely set rock-breaker. The action is thus partially abrasive, and a certain amount of dust is produced that the purely rolling or percussive action would avoid. It is this abrasive action that causes curves 8 and 12 to have contrary flexures. Only one sample of work from rolls could be procured, No. 11; but the screen is too coarse to admit of more than a conjecture of what it would do on work ranging from No. 24 to No. 70 sieve; the convexity of the curve would indicate that it would still remain so on finer work. Curves 8 and 13 represent work on the same ore, but with different screens. The production of so great a quantity of slimes by stamps is directly traceable to two causes—First, the blow is often in excess of what is needed, thereby over-crushing much of it. Secondly, a failure to promptly remove the crushed ore, through insufficient screen surface, which causes the ore to be churned and hammered still finer; practically the latter is the most serious of the two, because it will always be necessary to break the ore in some manner, while it is always possible to devise some more efficient method of removing the crushed ore than that now in use. The practical conclusions to be drawn from the diagram are—Stamps can never be used successfully for the preparation of gold and silver ores for concentration; and in any successful machine whose work will approximate to the ideal curve 16 the following principles must be regarded. The blow must be proportioned to the work; no abrasive action upon the ore is wanted; the ore when crushed to proper size must be immediately removed; it cannot be reduced in the same machine; it must work either wet or dry and it must be simple, strong, and durable.

#### NORTHERN INSTITUTE OF MINING AND MECHANICAL ENGINEERS.

At the general meeting of the members of this Institute, held in the Wood Memorial Hall, Newcastle, on Saturday, Mr. G. B. FOSTER in the chair, there was a large attendance. Professor Lebour read an excellent and useful practical paper "On a Great Fault at Annstead, in North Northumberland," in which he described one of the most natural sections and one of the greatest dislocations of the strata in Northumberland, and he also gave an example of the kind of reasoning by means of which the position of an unseen fault might often be inferred with certainty. Detailed descriptions were given of the North Sunderland and Beadnell limestone.

A paper was read by Mr. Henry White, giving an account of an occurrence which took place at West Stanley Colliery on Dec. 11, 1883. It appears that on that day a chimney 46 ft. in height was struck by lightning, and afterwards the electric current descended the shaft, following the course of the iron signal-rope. At the bottom of the shaft the flash was seen to pass from the handle of the signal rope to some metal piping a few feet distant. The descent of lightning down coal shafts has often occurred in this district. Many years ago an explosion occurred in a mine on the north side of the Tyne, and as there was no one in the mine at the time it was concluded as this occurred during a thunderstorm that the electric fluid had descended the shaft, and ignited the gas. This appears to point to the conclusion that it is necessary to attach to colliery chimneys and other prominent objects at these works lightning conductors, so that if struck the fluid may be conducted into the earth as direct as possible.

Mr. Thomas E. Candler gave a description of Thompson's patent centrifugal pulveriser—a machine on which rock and minerals are crushed through the action of a round steel ball being caused to rotate by the action of the edges of two discs inside a case lined with steel, so that the centrifugal force of the ball crushes the mineral against the case, from which it escapes laterally. This interesting meeting concluded by votes of thanks being passed to the gentlemen who had contributed the papers, which certainly possess more than ordinary interest.

#### MANCHESTER ASSOCIATION OF EMPLOYERS AND FOREMEN.

At the twenty-eighth annual meeting on Feb. 9 the accounts showed a good surplus on the year's income and expenditure, and the Society is in a healthy and prosperous condition. Mr. DANIEL ADAMSON, O.E. (the Chairman), remarked that they were greatly indebted to science for the exact knowledge they now possessed as to the composition of the ordinary commercial irons, and in carrying out their work of the present day it was indispensable that they should know what the material they used was composed of, how to treat it, and how to load it. Mr. Adamson then strongly urged the adoption of mild steel for various purposes. By its employment in the manufacture of guns the Government would have a much better material at half the cost than their present system, whilst such material was eminently fitted for bridge and girder construction, and if the knowledge they now possessed had been available when the first Tay bridge was built, he felt sure that the terrible disaster which occurred a few years back would never have taken place. He hoped that the scientific knowledge now available with regard to metals would have such an influence that men would insist upon good materials which would not come to grief when tested. With regard to welding scientists knew the materials that would weld, and it, therefore, became necessary that the services of the chemist should become an auxiliary in their ironworks. He earnestly hoped that their friends at the Victoria University and the Mechanics' Institution would give such instruction as would ensure a sufficient knowledge as to the character of the hidden metals that they would have less of awful disasters in the future. They ought to encourage by every means an exact knowledge as to metals, and that association might do a great service and increase its usefulness by promoting a thorough knowledge of the composition of metals in the direction he had indicated.

It was not a question of reduction in wages, but improvement in production, that would enable them to compete successfully in all the foreign markets, and exactness of knowledge as to the materials they used, as well as exactness in construction, their reputation for which had been so well maintained by Sir Joseph Whitworth and Co., which largely contributed to success.

Mr. THOS. ASHBURY, C.E. (President) said the want of co-operation between foremen and draughtsmen in the engineering trades for many years had been deeply deplored. There existed between them no public and recognised channel of communication, and as a body they were unable to consult for their general interests or individual advantage. While isolated from the men under their charge, and held by their employers at a respectful distance, the foremen engineers were in a solitary and unenviable position. To remedy this, in 1852 the London Association of Foremen Engineers was formed, and four years later, in 1856, their Manchester Association was established, but with a wider basis, taking in employers as well as foremen and draughtsmen of the engineering and mechanical trades. It had always been a prominent feature in their Association to encourage and cultivate those friendly relations between employers and employed, which tended so much to their mutual advantage, and never, under any circumstances, were the politics or the secrets of the trade discussed, and never had there been known any breach of confidence. One of the chief objects of the Association was to bring together those engaged in the direction and superintendence of engineering and mechanical works, for mutual acquaintance, and for promoting the exchange of opinions on interesting questions constantly arising from the progressive nature of the mechanical trades. In addition, they had funds, out of which they provided pecuniary assistance to members when required, and superannuation allowance for the aged. The Association had been eminently successful in the past, and it had a very hopeful future before it.

#### PULVERISERS VERSUS STAMPS.

At the meeting of the North of England Institute of Mining and Mechanical Engineers, at the Wood Memorial Hall, Newcastle-on-Tyne, on Feb. 9, Mr. G. B. FOSTER, M.A., in the chair, Mr. THOMAS E. CANDLER read a paper "On a Description of Thompson's Patent Centrifugal Pulveriser, including an account of its comparative advantages for crushing and pulverising mineral ores, coal, and other substances." In referring to mining generally the author briefly pointed out the defects adherent to stamping machinery, and went on to show that until recently no suitable pulveriser had been invented which would overcome the disadvantages found in stamps for the effectual and economical crushing of mineral ores and other tenacious substances.

It was explained that in Thompson's mill quite a new departure had been made by the introduction of centrifugal force for this purpose, and that the machine designed on this principle had given excellent results in crushing and pulverising substances of the hardest character, while doing equally well in softer substances. The crushing power is solely acquired by the centrifugal force imparted to a hammer steel ball by its being propelled by a pair of flexible discs around the inner periphery of a steel shoe-ring, the substance being crushed between the ball and the shoe-ring. This seems to be the only way in which centrifugal force can be successfully applied, for it is very necessary that the ball should have a perfectly free and rolling motion, and should expose all its surface for useful work. The mill in its structure is very simple, and has few working parts, and the wearing parts consist only of the ball shoe-ring and discs.

Two extraordinary features in this machine are the extreme fineness of the pulp and the output of the mill. It is stated that 75 per cent. of the pulverised material passes through the screens, with 10,000 holes to the square inch, and that only a very moderate-sized machine has an output of 60 tons in 24 hours. When one reflects that a battery of 20 stamps cannot approach this quantity, and that the ore crushed seldom passes through screens of more than 900 holes to the square inch, it is no exaggeration to say that a machine of such a character threatens to totally revolutionise the whole treatment of mineral ores. Mr. Candler further adds that it was assumed in many of the Indian gold mines that the quartz was allowed to escape before being sufficiently reduced, and consequently screens with from 2000 to 3500 holes to the square inch were sent out to remedy this defect, but on these being applied not 10 per cent. of the original output could be maintained, and they consequently were discarded. It is only natural to suppose, from what has already been heard of these mines that a machine, such as Thompson's, would not only have given better results in the treatment of the various reefs there, but would probably have enabled the question of the existence or non-existence of workable gold to have been more conclusively settled.

#### INFLUENCE OF GEOLOGY ON BRITISH SCENERY.—No. II.

In his second lecture on this subject Dr. GEIKIE said that a true mountain-chain is the result of a local plication of the earth's crust, and its external form, in spite of sometimes of stupendous erosion, bears a close relation to the outline impressed on the area by the original uplift. Tried by this standard, hardly any of the heights of Britain deserve the name of mountains. With some important exceptions, as in the South of Ireland, they have been carved by erosion out of upheaved masses of land of unknown form. Their individuality of form has been determined by geological structure and composition. As regards age, the oldest British mountains are those of Archaean rock in the outer Hebrides and north-west of Scotland. The Welsh mountains may be grouped under two types—that of Snowdon, where the prominence of the ground has been produced by the presence of vast masses of durable volcanic rock which have resisted the degradation that has lowered the surrounding regions; and that of the Breconshire Beacons, which are obviously merely the relics of a once extensive tableland.

The mountainous area of the Lake District presents some of the most interesting problems in the evolution of topography. The remarkable radiations of its valleys and lakes has been attributed to a system of divergent fractures. But examination shows that no such fractures exist, and that, on the contrary, the valleys run quite independently of the geological structure of the ground. We are forced to the conclusion that their features have been determined when the Lake District lay buried under a deep covering of carboniferous, and, perhaps later, rocks. This covering being eventually ridged up into a dome-shaped eminence, the earliest drainage diverged from its summit, and the streams thus determined have held their course ever since, gradually cutting through the covering, and then eroding deeply into the underlying more ancient rocks. The mantle of carboniferous limestone, coal measures, &c., has been entirely stripped off, and the rugged contours of the mountains have been gradually sculptured by the agents of erosion out of the exposed mass of underlying rocks.

The Scottish Highlands were likewise in large measure buried under later accumulations, and their characteristic outlines have been produced by erosion, guided and modified by geological structure and composition. The Irish mountains are grouped around the great central plain, and may be attributed to at least three periods. Those of the north-west and south-east are a continuation of the heights of Scotland and Wales. Those of Kerry and Cork are the most typical mountains in Britain, being true local uplifts. They form long, lofty ridges, and have undergone vast denudation, the depth of rock removed from their summits being in some cases probably not less than 12,000 ft. The Mourne Mountains may be classed with the conical heights of Skye and Mull. Of British tablelands, the great central plain of Ireland is the most striking and interesting. It has been formed by the stripping off of some 3000 ft. or 4000 ft. of carboniferous strata, leaving an undulating eroded surface of the underlying limestone. The moors and wolds of Yorkshire present a fragment of a tableland of nearly horizontal Jurassic and Cretaceous rocks. The Lammerrmuirs and Scottish Highlands must also be regarded as tablelands in various stages of destruction. The fate of tablelands is to be cut down into systems of valleys, with intervening gradually diminishing ridges. Some of the earlier stages of this destructive process may be seen in the youngest British tableland—

that of the Basaltic region that extends from the south of Antrim through the inner Hebrides.

#### FOREIGN MINES.

**AKANKOO.**—J. Lane, Jan. 11: No. 1 tunnel has been driven a total distance from mouth of 545 ft., and should in about a month if all goes well out the reef which outcrops on the north side of Fousonby Hill. The drive west from No. 1 tunnel is in 58 ft., and the drive east from ditto is in 53 ft. The first slope west from the Taylor shaft has been driven 13 ft. The drive from No. 2 shaft is in 17 ft., and the drive east from ditto is in 23 ft.; the rock in all the drives preserves the same general character as before. The frame of the mill-house is up and all rivetted together, it is roofed in and the overhead traveller is in place. The carpenters are busy with the timber-work. The trench for supplying water for the stampers is nearly complete, and the short tunnel—about 40 ft. long—to connect same with sump under Mill House Hill is being actively prosecuted. The slip for steam-launch and lighter is nearly completed, when we shall be able to overhaul and repair them.

**BARANCOANES.**—J. Garland, Feb. 6: Notwithstanding the hardness of the rock we made very good progress in sinking the engine-shaft last month, 3½ fms. having been sunk, making a total depth from surface of 25½ fms. We expect to communicate with the cross-cut and bottom level this month. The cross-cut south-east from the old 24 south was extended 454 metres and driving suspended, the end being now under the shaft. The men completed this work yesterday, and will be put to rise towards the shaft forthwith. Not to impede this more important work stopping has been suspended till the communication has been effected. The erection of the dressing machinery has been somewhat delayed through waiting for its arrival from Lisbon. It was only last week that we received the first instalment of jiggling machinery. Tangye's steam pump, &c., and a portion of it is still delayed. The crusher is almost ready to work and a hoist and tram-incline is being put up to wind the reserve crosscut to the shaft back the adit level and producing good stamp work. I am getting a track in the adit and putting in a stull from the slope between adit and No. 1 shaft, so as to facilitate the hoisting of trade from rise. No. 1 level east shows good stamp work and some small barrel work. In the slope between the first and second level I have put in a stull at the back of second level, so that we can stop without interfering with our tramming. No. 2 Level East: A horse of trap has come into the vein, and the level looks very poor at present. The crossing I referred to in my last appears to have heaved the vein. No. 1 shaft: We are all hoisting from below second level, and the trade is as good as I expected it would be. No. 2 level west looks well in stamp rock, with a few pieces of barrel work. We have cut a small stream of water, which seems to be increasing, but I do not apprehend any trouble from it. Our steam pump is now being removed to the drift under No. 1 shaft in second level. This will be safer and better than where it was. Knowlton shaft has continued to show good stamp rock, and some little barrel work. This morning the vein seems to be dipping sharper than it was. Knowlton Level East: We drove the cross-cut to the foot-wall showing the vein to be 13 feet 6 inches wide, and the same throughout. We are now pushing the level on the same course as before. No. 2 level East: The shaft looks well, and is turning out good stamp rock. Mill: The trussel work will be finished by this day week, and the mill start on Wednesday, the 20th, unless something unforeseen takes place. In hoisting the rock from the main bins to the small pockets behind the mill I found it would cost a great deal of belting and be inconvenient. In order to obviate this I have borrowed a small engine from a neighbouring mine (the Evergreen), which will suit the purpose. Rock house is now boarded in and shingled. The shingles are being steadily cut out for the rock house, &c. We have now out about 400 cords of wood for the locomotive, leaving another 100 cords to come. I have only contracted for 2500 cords of wood for the different engines so far. Nothing further to report.

**BRATSBURG COPPER.**—John Daw, Z. W. Daw, Feb. 9: In the 25, driving west of Murchison shaft, the lode is 3 ft. wide, producing 134, worth of ore per fathom; this end is within 3 or 4 fms. of hoisting to York's. The five slopes working in this level are worth on an average 12½, per fathom. In the 26, driving west from the 25, the lode is 3 ft. wide, producing 134, worth of ore per fathom. In the 27, driving west from the 26, the lode is 3 ft. wide, producing 134, worth of ore per fathom. In the 28, driving west from the 27, the lode is 3 ft. wide, producing 134, worth of ore per fathom. In the 29, driving west from the 28, the lode is 3 ft. wide, producing 134, worth of ore per fathom. In the 30, driving west from the 29, the lode is 3 ft. wide, producing 134, worth of ore per fathom. In the 31, driving west from the 30, the lode is 3 ft. wide, producing 134, worth of ore per fathom. In the 32, driving west from the 31, the lode is 3 ft. wide, producing 134, worth of ore per fathom. 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in the mill. Ore shipments for past fortnight:—313 sacks of cobbed ore, weighing 9 tons 1515 lbs.; 23 sacks of screenings, 1740 lbs. — 10 tons 1255 lbs.

**DENVER GOLD.**—Alfred Rickard, Jan. 25: In any letter of the 15th ult. I described the progress made up to that date, and the improved prospects before the company, and I am pleased to be able to say that there is a further improvement still, especially with the discoveries at the 900, and the improved condition of the stoping ground at the 1275. We are now in a position to run 40 stamps with a full supply of ore for the next three months, and we only await the intersection of the lode at the 900, with the discovery of a good bunch of ore there, to place us on a more permanent footing for a profitable output. The 1350 is of much greater promise than the 900, and the improved prospects likely that this will soon come into a shoot of ore. All round the prospects have improved, and it will soon become necessary to consider new places of operation for the development of the various ore bodies now showing up so favourably.

**DENVER GOLD.**—F. S. Craven, Jan. 24: The 800 drift in north vein is very poor, but all the stopes are very good. The cross-cut is not yet through. We shall have an accurate survey of the ground shortly. The 900 west drift keeps passing through very changing ground, but may be said to be in pay all the time. The raised stopes are good, and carry considerable smelting ore. We have 10 tons of this on top ready to ship; 10 tons of the 800 west smelting ore were shipped last week. The 1275 west and bottom workings have not changed.

**DEVALA MOYAR GOLD.**—Mine Manager, Jan. 21: At Strathearn reef, in the southern drive, we have started to cross-cut. There is no change in the driving north. At Salomon's reef the tunnel has been driven 12 ft. for the week. The shaft is down 54 ft., with a fair prospect of gold in it. I am now crushing a sample of 40 tons of ore, and the rate of sink is 1 ft. 1 in. I will mill 40 tons from the shaft we are now sinking. Harwood Tunnel has been driven 8 ft. during the past fortnight.

**EBERHARDT.**—Frank Drake, Jan. 19: The drift No. 9, from the 6000 west has advanced 8 ft., making a total length of 750 ft. This drift is looking better than the week previous. We have made assays of three samples taken from the face of the drift on the 13th, 16th, and 17th, which we find in silver \$470, \$241, and \$345 respectively. The ledge matter is about 1 ft. wide. The lime-rock lying next to the ledge is not so much stratified, and we think our wall will soon begin again all right. The No. 2 rise has advanced 7 ft., making the total height 207 ft.; this work is principally in spar. The wall continues with us very regularly; there has been but a very little variation in it—no greater than 5°. Its present angle is about 75°. We have a small seam of ore in our working in the side of No. 1 drift, what we find is of good grade. Our last assay was \$157.08 in silver. If this seam would enlarge it would be very pleasing to me, as doubtless it would to the company.

**HORN CROOK SILVER-LEAD.**—Report for January: Main shaft has been sunk 4 metres. No time has been lost except for repairing and protecting the claten and pump. Better progress is expected to be made this month.—Sixth Level: The north drift has been advanced 8-30 metres; the lode is 1½ ft. wide, and yields 8 cwt. of silver ore, value 12½ to 13½ per fathom. The same level south was driven 8-20 metres, the lode being more mixed, but yielding 4 cwt. of silver ore, value 6½ per fathom. The lode in the north is 11-55 metres; the lode yields 8 cwt. of ore, value 12½ to 13½ per fathom, and the same level south has been extended 8 metres, yielding 4 cwt. of ore; value 6½ per fath. The stopes in the north drift at this level have improved, and are valued at 6 cwt. of silver ore; value 9½ to 10½ per square fathom. In the third level the drift south advanced 9-30 metres, giving 4 cwt.; value 6½ per fathom. The cross-cut in the north drift at this level was driven 6-30 metres; the lode is not yet intersected, but some veins of quartz are met with. Drift south in first level extended 10½ metres, producing nothing but a little blende. North shaft sunk 9-12 metres, still unproductive, though there is ore visible at times.

**HOOVER HILL GOLD.**—Jan. 25: In the drift we are running under the tunnel stop at a depth from surface of 135 ft., we have encountered a stringer of a few inches of ore carrying a little gold, the tunnel ore body pinched out completely in the bottom of the stop at a depth of about 100 ft. from surface, and gave no signs of continuing in depth; the drift at 135 ft. has been driven under it to prove the ground. This (the Hawkins) part of the mine has been, and is, costing us a great deal of money, and has latterly been yielding very little ore, so that I have been considering the advisability of cutting down expenses in this part of the mine. We are now following ore indications at four points, and driving a cross-cut through dead ground at a fifth. In the course of a month I shall be better able to judge as to the best thing to do. By putting another part of men to stop in the Gallimore, we could keep the mill supplied with ore of about the same grade as we are crushing, and at the same time not break ore faster than we are opening it up. The proportion of pay-roll belonging to the Hawkins part of the mine amounts to about one-third of the whole. In the Gallimore we have about four months' supply for mill in sight. The Briola shoot (which we are working in the Gallimore) has, so far, from the 130 down to the bottom of the shaft at a little over 200 ft., proved very regular. It extends about 60 ft. along the course of the vein, and averages about 18 in. in thickness, although in the bottom of the shaft it is about 3 ft. thick. From the nature of the vein, a considerable amount of slate has to be broken and milled with the ore, as the general character is that of a network of stringers going through the hard slate. We purpose making another trial, but the ore at the present time is not profitable, and yields us from 5 to 10 dwts. per ton in the mill. It is a question how far by picking we could increase the grade of ore. We have already made a trial in that direction, but without decisive results. We found that there was not so much slate as might be expected that had no stringers of quartz running through it, and hence apt to carry gold. We discontinued the practice chiefly because we found that in washing and picking the ore at the surface, rich specimens, which sometimes were carried off by the pickers and others. We purpose making another trial. By continuing the work now in progress in the Gallimore and Briola shaft, should the vein in the bottom of the Gallimore continue as it now is, and the ground between the bottom of the Briola shaft and the back of the drift, south-west from the Gallimore at 130, turn out as I expect, we shall in about six months' time have from eight months' to a year's supply of ore for the mill opened out ahead.

**JAVALL.**—G. E. Chambers, Jan. 5: I beg to hand you the following report of the past month's working:—Mine Dolores stopes were driven 6½ varas west. Nispero stopes No. 1 and 2 were driven 4-5½ varas east, and a cross-cut made north and south to discover width of lode. I have now placed a small tram down here, and shall commence formally to stop away the ground; the lode is extremely wide. I also made a rise of 4½ varas in the western ground. From Nispero stopes No. 2, 57 tons of quartz were extracted from the western side, and 141 tons from the eastern. In Nispero No. 3 a rise of 9 varas was made, and a cross-cut to north to communicate with Nispero stopes No. 4. This shaft was driven 2 varas, ground even with the surface, but the day a streak of better-looking quartz has appeared in the end, which shows gold to about 2 or 3 dwts. I feel certain that we shall very soon come into good quartz. Sinking No. 1, under Socorro, was driven 5½ varas to the west, quartz improving all the time; about 5 varas ahead I expect to be under the commencement of the rich Socorro vein. Sinking No. 2 was completed to the depth of No. 1 (21½ varas), and I shall this month commence driving a level east to meet sinking No. 1; the intervening ground is about 150 varas long, so that as I intend to stop right down to the depth of 21 varas, we shall have some time, rough estimate, to calculate at about 10,000 tons. San Pedro stopes No. 1 yielded 78 tons of quartz. San Pedro No. 2 was driven 9½ varas to east, and yielded 81 tons of quartz. Laken stopes gave 132 tons of quartz. From Letrina stopes I brought down 77 tons to the mill; but have temporarily left this place, the quartz being very hard and the quality poor in comparison with other parts of the mine. The new rise to surface between Laken and new shafts being completed, I have commenced to stop away on the surface, where very fair quality quartz has been encountered. The total number of shafts extracted from the different stopes, interior and surface, including those already mentioned, was 710, and from the Manto workings 135 cubic varas. You will see by the mill return that the general average value of the quartz has increased to 6 dwts. 4½ grs. per ton, this is extraordinarily good; the whole of the mine in its various workings has improved in appearance, and I have every hope of continuing to report a good average value.

**Mills.**—La Fé: Under this head I have to give you the important and gratifying news of the turbine recently sent out. Soon after the mail left in December the water-power fell off, first to 20 stamps and then to below 15. I then decided to stop entirely, and put on the Red Hand turbine. This was on the 17th, as besides the actual placing of the turbine, I had many other repairs and alterations to do. I anticipated having to spend at least 10 or 12 days in the completion, but by dividing and using all the labour, and by offering various small premiums, I had the satisfaction of seeing the work completed and the mill put to work again by the 23rd. Amongst the numerous repairs, I entirely renewed the turbine, and replaced and repaired one of the waste-gates, took away an objectionable corner in the water-course, thoroughly cleaned the whole of the water-course, re-levelled the main shaft and re-cast all the bearings, put down two new copper plates and re-laid the other old ones; took away the ground behind the stamps to facilitate the damping of the quartz, and at the same time to give more room for storing, and many small repairs. To refer back to the turbine, I am happy to say it proves to be immensely superior to the faulty machine we previously had in the shape of a shield's turbine, and only takes about two-thirds the quantity of water to drive all 30 stamps, two settlers, and the crusher. Of what I see at present I have no fear whatever of ever having to stop stamps in the wet season through scarcity of water-power. In the dry months we shall also be able to use nearly all the stamps, except, of course, in March, April, and May; but even then we may be able to run sufficient stamps to render it more economical to dispense with the engine. In April and May I have great doubts of there being sufficient water for more than five stamps. I am sure the experience of the coming dry season will prove this, but I shall prepare firewood for those two months to be on the safe side. I must congratulate the company upon having acquired the efficient machine, and I feel certain that brighter days are now before us, both for decrease in expenditure and increase in gold. The 30 stamps worked 18-24th days, crushing 1354 tons of quartz, which yielded 387½ ozs. of gold, making an average of 5 dwts. 17 grs. per ton. We are still working all the 30 stamps merrily, and as this month I anticipate no stoppage for more than pay-day, I feel myself justified in promising you another good remittance next month.

**La Esperanza.** The eight stamps worked 18 days, crushing 320 tons of quartz, which yielded 55½ ozs. of gold, making an average of 5 dwts. 22 grs. per ton. **La Caridad:** The two arrastras worked 17 days, and yielded 36½ ozs. of gold; the result here this time is better, which is chiefly due to my having employed the men during the stoppages on the other mills to dig up sand from the old tailings race. Total remittance consists of 519 ozs., and the average yield upon total tonnage is 6 dwts. 4½ grs. per ton. I think you will agree with me in considering this the best remittance. I have ever made you considering the short time of working.—Receipts and Expenditure: The expenditure was \$991, the remittance I value at \$1300. I congratulate the company upon so favourable a commencement of 1884, and sincerely hope for a continuance of good fortune.

**KOHINOOR AND DONALDSON CONSOLIDATED.**—Mr. Alfred Rickard, manager, in his report for the two weeks ending Jan. 15, says:—Donaldson: At the No. 1 level the vein is 1 ft. wide, yielding 1½ ton per fathom, which is all milling ore. The No. 2 level stopes north of rise is yielding ½ ton of smelting and 3 tons of milling ore per fathom; the lode on the length of the stop is 2 ft. in width, 4 in. in height, and the balance being mill ore. The ground and yield in the same stopes south of rise is of a similar character to the foregoing. At the bottom of the No. 2 level stoping ground is being discovered, the vein being 14 in. wide of fair grade. The intermediate level south stopes is yielding 1½ ton of smelting and 3½ tons of milling ore per fathom; the lode is strongly mineralized, and the work is preparing paying ground for the mill. The intermediate level north stopes is yielding ½ ton of smelting and 2 tons of milling ore per fathom; the vein is about 15 in. wide, and

of fair grade. At the Champion the 600 west stopes are yielding 2 tons smelting and 7 tons of milling ore per fathom; the lode is large, carrying mineral throughout. The tributaries have connected the 400 east stopes with the 400 by rise, giving good ventilation and facilities for extending the stopes in the bottom of the level; the grade of the ore is fairly maintained. The work in the mill is now reduced to the smaller finings. A few days only will be required to cut and fix the belts, water and steam pipes, and to splice the wire-rope, and put on the buckets for the tramway. To sum up, we foresee the disbanding of the staff engaged on the construction about the 28th of the month (Feb. 1, January). The output in smelting ore for the month of December amounted to \$3000, and several hundred tons were added to the stocks of milling ore.

—Mr. Rickard telegraphed the directors on the 9th inst. as follows:—Mill cannot be supplied before 15th. Tramway automatic action must be assisted. Am fixing gear.

**PESTALUNA UNITED.**—W. Roberts, H. P. Clemen, Feb. 2: District of Pestaluna; The 33 and north on No. 5 lode, shows a better defined lode in stratified schist, yielding 4 tons per fathom at 5 dwts. per ton. The 65 south continues in hard rock and without change. The 90 north carries two good walls and a regular lode, yielding 2 tons per fathom at 10 dwts. The 110, south on No. 1 lode, is in micaceous schist with a small branch of pyrites against the hanging-wall, yielding tons of good quality ore. The 130 north is producing 3 tons per fathom at 9 dwts.; the rock is stiff and of a mixed character. In the 130 south the ground is much easier, carrying a small quartz lode mixed with pyrites, giving 2 tons per fathom at 7 dwts. The 100 cross-cut west towards No. 5 lode, is yielding at the rate of 12 ft. per fathom at 9 dwts. The lode is widening and of a dredgy nature; the part being carried is about 1 metre wide, and the western wall has not yet been reached. The present yield is 8 tons per fathom at 8 dwts. per ton.—New Work: A drift in south end of stopes over 90 is being extended in a big lode, which promises to open good stoping ground, and is now yielding 12 tons per fathom at 12 dwts. In the stopes over the 110 level a drift has been taken up on a branch in the eastern side of a similar bearing to that of the No. 2 lode, and is giving 3 tons to the fathom at 18 dwts. per ton. A cross-cut to be driven eastward from the 120 south will be commenced after the stuff in the level is cleared. We are making the trials with the jigg machinery referred to in our last, but the time has been too short to allow of a definite opinion to be formed as to its probable success. Owing to the scarcity of water we have reduced the working number of mills to 14, and there is grave reason to fear that we shall shortly be compelled to still further reduce our milling power. The speed is hoisting is also greatly retarded. We have not yet commenced the transport of millstone and timber from want of snow.—Valtoppa: W. Roberts, H. P. Clemen, Feb. 2: In the south on new lode and slide at No. 1 level the western branch is seen to be a sort of flat bed dipping to the west, but terminating upwards in the level. It shows a good quantity of nice looking pyrites and the present yield is estimated at 6 tons per fathom at 1 oz. per ton. The eastern branch has lately been opened out also, and seems to be the regular continuation of the new lode, for now that the ground is no longer broken and disordered as at the junction it is clear that this lode is above the slide. It is yielding at the rate of 10 tons per fathom at 8 dwts. per ton. The lode in the rise above the No. 1 level is giving 12 tons per fathom at 9 dwts. Though much smaller than formerly it makes against the hanging-wall, and now gives greater promise of continuance. The cross-cut east from winze under the level is passing through genial rock with small strings of quartz. The end driving south on branch east of new lode at No. 1 level shows a good strong lode with a plentiful admixture of pyrites and every appearance of continuance both in back and bottom, now yielding 15 tons per fathom at 10 dwts. per ton.

**PITANGUI GOLD.**—Rio de Janeiro, Feb. 9: state that the produce for January was 1000 dwts. of gold, and 4 dwts. 425.

**RHODES REEF GOLD.**—Feb. 14: The directors believe that their colleague, Mr. Carnegie, must have now reached the mines. The manager reports, under date Jan. 21 that he has nothing fresh to communicate.

**RICHMOND CONSOLIDATED.**—Cablegram from Eureka, Nevada: Week's run (one furnace), \$11,000 from 269 tons of ore; refinery, \$15,000.

**RUBY AND DUNDERBERG CONSOLIDATED.**—Jan. 20: Dunderberg: There are 20 tributaries to the main lode, and consequently there is little or no change since my last. The miners who were at work have all refused to continue to work on the terms offered. We have advertised for others to take their place. Whether we will be successful or not I am not prepared to say. Have shipped 92 tons this week.—Lord Byron: The cross-cut from the end of the tunnel has been advanced 5 ft. during the week; total 477½ ft. Grigg's and Co.'s cross-cut has been advanced 7 ft. during the week, and is now connected with the Valentine shaft; total, 53 ft.

—Telegram, Feb. 12: 24 tons shipped, and 24 tons smelted realising net \$442. Snow has blocked the roads for nearly the whole week.

**ST. JOHN DEL REY.**—Telegram from Morro Velho dated Rio de Janeiro, Feb. 11: Produce for month of January 17,500 dwts.; value, 6781½; yield, 3½ ozs. per ton.—Quibai: 1100 tons stamped (word doubtful); yield, 1½ ozs. per ton.

**UNITED MEXICAN.**—Mr. Hay, Jan. 14: Mine of San Cayetano de la Oveja: In the frente No. 2 of Santa Rosa west the lode is a little broader, measuring 85 centimetres, and the small improvement of the ore continues. In the contraleño No. 2 of Santa Rosa the ore is good on a breadth 50 centimetres, the size of the vein. In the frente No. 1 of San Juan west the end has a better appearance than lately, and at the end of last week we discovered a very narrow strip of ore 3 centimetres broad. To the base of the lode another strip of quartz has appeared, but without silver, and from its reils a small quantity of water is oozing. In the frente No. 2 of San Juan east the ore is a little narrower, measuring only 1-75 metre in breadth, of which 55 centimetres are in ore of very good class. In frente No. 3 of San Juan west the strip, measuring 30 centimetres, continues to give fair ore. In frente No. 3 of San Juan east the lode is still 1-60 metre broad, but as the ore is ramified, its product is but small. In pozo No. 3 of San Juan the costra to the bajo we worked on has diminished in value. On 5th inst. in pozo No. 4 of San Juan the lode measures now 1-45 metre, but of this 45 centimetres are of a better quality. In the pozo No. 5 of San Juan the strip continues to give good ore on a breadth of 40 centimetres, but this winze will soon hole in the third frente of San Juan west. In pozo No. 6 of San Juan this winze has holed in frente No. 2 of San Juan east, and by this communication the whole of the lower workings of San Juan are well ventilated, as they were very hot before the communication was achieved. We could not take out the attic that had been thrown down in them, but we were enabled to get the attic to go on sinking the winze. In the frente No. 9 of San Andres west, the lode continues to show good appearances, but nothing more.

In the cross-cut from pozo No. 2 of San Andres having reached the lower wall we have driven in frente No. 10 of San Andres west; in this end the ore goes on well, the lode measures 1-60 metre in width, of which 48 centimetres of good ore seem to improve downwards. We have not yet found any ore in the pozo of San Antonio, but we continue to see good appearances. The sale in rescate was about 321½ cargas—2000. We introduced at Duran 315 cargas and 2 cargas 3 arrobas and 11 lbs. of ore, making a total extraction of 639 cargas hacienda ore. The men who carry out the ore on their backs struck again, and refused to work Monday and Tuesday, but on Wednesday went underground, having received extra pay. In the frente of San Martin slight traces of silver continue to be perceived in the strip of ore-looking stuff we work on. As I said in my last report the rails are laid down, but we have yet to clear out the rubbish that has been thrown down in the rectification and levelling of the road. We expect to have some work at the end of this or beginning of next week. Returns from the mine of Cayetano de la Oveja for the week ending Jan. 12, \$6545-99; outlay, \$3030.

—Feb. 13 (telegram): The excess of returns over outlay in the mine of San Cayetano de la Oveja for the week ending Feb. 9 is \$3030.

#### THE POTOSI GOLD MINING COMPANY.

The directors of this company have received letters from Mr. T. B. Provis, dated Peru, Jan. 12, 1884, in which he says:—

**Attwood's Shaft:** In my last I stated we thought of starting a level west about 80 ft. from surface, but on thoroughly examining the side of the shaft at this point the ground was somewhat broken, so we decided to go 20 ft. lower. This we have done, and started a level west about 100 ft. from surface, which we shall call the No. 1 level. We have driven 8 ft.; the lode is well defined, fully 5 ft. wide; looks well for an early improvement, more dark veins appearing in the quartz, and of which it is to be expected that we shall get a good level west. Next week we shall start another level about 60 feet below this, which we shall call No. 2, drive them both as quickly as possible, and open up stoping ground. In about a month we shall be able to raise 30 tons per diem from this shaft; all the quartz taken out will give us at least 1 oz. per ton in the mill. This will more than pay the working expenses here, and I shall be much surprised if the next few months do not open up much richer ore. Within 100 ft. of this shaft there is a large old workings from the surface more than 200 ft. long. Everybody says they were rich, and had to be abandoned solely on account of influx of water. We have erected a temporary hoist and platform at surface, by which we can hoist at least 35 tons per day in the course of a few months. As the mine gets developed we shall have to put in skip-road, ore-bin, and derrick, so that the quartz can be dropped from the skip into the wagon and taken direct to the mill; the ore-bin to be used in case of accident to the mill or tramway, as I much prefer the broken ore to be deposited at surface rather than leaving it underground.

**Air-Shaft.**—We have only sunk 4 ft. since my last, all the men being employed in putting in the necessary timber to start driving and preparing the shaft for the main hoisting-shaft. The large derrick is completed, shieve fixed, and the turn pulleys from the hoisting-engine and the shaft timbered with the mill tramway. The men are to-day fixing ladder, collar, and skip-road; all being well by the 16th the work will be completed and two levels started, one east and one west from the bottom of the shaft. We shall also continue sinking the shaft, and I think we have strong hopes that early in April we shall have sufficient quartz from this shaft alone to keep 20 stamps continuously at work.

**No. 3 Shaft.**—We have not yet intersected the lode in the bottom cross-cut. On further examination we find the lode gaining north rapidly, so we shall have some feet further to drive than was at first thought. There are two or three drawbacks in connection with this work; one is the shaft is so very small there is very little air for the men to work. Then, again, the difficulty of getting the timber to surface, and the fact that you will agree with me in considering the timber to secure the ground opened by the old workings. In a few days we shall start a winze from the bottom of this level in quartz that will give good results in the mill, something like 2 or 3 ozs. to the ton, but we cannot hope to raise more than 15 tons of this per week for some time. The shaft must be made larger, hoisting-engine erected, and levels driven on the course of the lode. This will take time, but when it is done I am sure you will be satisfied.

**New Chile.**—As you are aware this lode was said to have pinched out. A capital tunnel was driven into the side of the hill, and a very good shaft (well timbered) sunk from surface. We put two men to cut into the side of the level, and in 4½ ft. cut the lode; it is 20 inches wide at this point, and yields 1½ oz. of gold per ton. We have broken about 40 tons from the upper level on this lode. There are to-day two men cutting into the side of the shaft, about 25 ft. below the tunnel, to find the lode. I hope 10 or 12 ft. will prove this.

**Mill.**—I purpose starting 10 heads this day week, and about the end of the month 10 more will be started. I cannot quite see my way clear to start with 20 heads, as I do not want to make a start with more heads than I can keep fully at work. I think by adopting the above suggestion we shall be gradually

and legitimately increasing our returns. You may calculate on 20 stamps running the whole of February (unless some accident occurs). The quality of the quartz will not be a fair average, nor any criterion of what the mine will produce. We have about 60 tons at the mill taken from the cutting through the lode in Attwood's and the air-shafts, also a few tons from the first level of No. 3. There is scarcely a foot of ground opened on the course of the vein. If the whole of the quartz will average 1 oz. to the ton for the first month or two it will be quite as much as we can expect, but I repeat as soon as the levels are extended on the lode, we may very fairly expect a great improvement in the yield.

We have come to the conclusion that it will be almost useless to attempt any surface work during the wet season, which begins about April. What we intend doing is to start 30 heads of stamps, keep them fully supplied with quartz, concentrate all our force underground, and open up the mine during the wet weather. In the autumn erect fitting shops, and complete the mill with 60 stamps. This being done with our appliances for hoisting, &c., if we can get an average of 1½ oz. of gold to the ton of quartz, good profits will be made. In the meantime, I think from April to September, running 30 stamps, we shall make profit enough to pay for all our extra work, including the erection of the 30 heads of stamps.

Your remarks about the pay-roll have been noted. From Jan. 1 quite a different system has been adopted. At the end of the month one can see a glance how many men have been employed on full time at the various parts of the mine, and the separate work, with the cost of each. We have also adopted a system of giving out supplies that will check waste, and we shall know from each place what it is costing to break the quartz. For example, the foreman of Attwood's shaft has twice a week a certain quantity of fuse, dynamite, candles, and steel drills given him, and he gives a return of the number of men employed by him, number and depth of holes bored, and the tons of quartz broken. The quartz is checked by the man who receives it at the surface and trams it to the mill, he having to give an account of the number of buckets taken out and trucks taken to the mill. We have already set each department on a good system, and we can get more work done by less men, which means less cost.

#### Meetings of Public Companies.

##### INDIAN GLENROCK GOLD MINING COMPANY.

An extraordinary general meeting of shareholders was held at the City Terminus Hotel, Cannon-street, on Tuesday.

Col. HOWARD in the chair.

Mr. SAMUEL JENNINGS (the secretary) read the notice, which stated that the meeting was called for the purpose of submitting for confirmation the resolutions passed at the extraordinary general meeting held on Jan. 26.

The CHAIRMAN said that at the preceding meeting a point was raised as to the probability of the company being able to recover anything from the vendors of the property. At that time the directors had not taken counsel's opinion on the matter, though other companies had. Since then they had taken the opinion of Mr. Horace Davey, Q.C., and that opinion was to the effect that the shareholders would be unable to sustain a claim for the return of the purchase-money. He then moved the confirmation of the following resolutions:—“That this company be wound up voluntarily, and that John Turner Hopwood, a director, and Samuel Jennings, the secretary of the company, be and they are hereby appointed liquidators for the purposes of such winding up.” “That the liquidators be and they are hereby authorised to sell and transfer the property, business, and assets of this company to a company intended to be registered, with Limited Liability, under the title of ‘The Glenrock Company (Limited)’ in consideration of the latter company agreeing to discharge the debts and liabilities of this company, and the costs of, and incidental to, the sale, and in consideration of 182,428 fully paid-up shares of 1s. each in the Glenrock Company, for distribution amongst the shareholders in the company.” “That the liquidators be and they are hereby authorised to enter into and execute such agreements, and other documents, as they may think fit to carry out the purposes aforesaid.”—Mr. GILLESPIE seconded the motion.

At the request of Mr. HENDERSON, the solicitor, read the case submitted to counsel, and the opinion.

Discussion then ensued as to whether an individual shareholder could dissent.

The CHAIRMAN declined to allow the solicitor the question of an individual shareholder as concerning himself personally, and advised the shareholder to consult his own solicitor. The board were acting in a perfectly legal manner, and they were advised by Mr. Horace Davey that the shareholders would simply waste their money if they took proceedings against the vendors.

The motion upon being put was carried by 22 to 2.

Mr. HENDERSON then demanded a poll, but as the demand was not supported, the request was not complied with.

Mr. HENDERSON thereupon protested against the resolutions being confirmed. The meeting then closed with a vote of thanks to the Chairman.

**NORTH BUSY.**—At the meeting on Feb. 8 (Mr. T. Woodward in the chair) the accounts showed a loss on the three months' working of 503s. A call of 3s. per share was made. Capt. John James (the manager) reported that in driving the south cross-cut to cut the copper lodes they unexpectedly met with a tin lode, which was now 2 ft. wide, and worth 7½ per fathom. Their prospects in the south part of the mine were second to none in the county. They had one lode intersected, and three or four more to intersect by the present cross-cut, the lodes being whole to surface and the entire length of the mine. Another advantage they had was that of being able to take up another level 15 fms. deeper without the cost of pumping water, which was a great consideration. This deeper level would be driven on a lode for the whole length, and, no doubt, they would find mineral in paying quantities. Capt. H. Trevethan remarked that the new discovery was the most important made in this mine for many years, and had he known that lode to be running through the sett, he should have worked it in preference to the one that made such good bunches of tin when he leased the property. He had no doubt that when the copper lode was reached it would be productive, as very large quantities of ore had been raised on the course of the lode by other companies.

**“E. C.” POWDER COMPANY.**—An extraordinary general meeting of shareholders was held at the Cannon-street Hotel, on Thursday, in accordance with a requisition which had been presented to the board of directors, to consider a resolution to be moved by Mr. Cholmondeley Pennell, for the removal of five members of the board, and their substitution by an equal number of names to be proposed. Lord Brabourne presided, and there was a numerous attendance of shareholders. The Chairman called upward Mr. Pennell to bring forward his motion, and Mr. Pennell moved his resolution, which was to the effect that Lord Brabourne, Mr. John Bunell, Lieut.-Gen. Goodlake, Mr. Capel Hanbury, and Mr. Albert Money be forthwith removed from the board, and that Mr. Walter R. Snod, Mr. George Plater, Mr. Thomas F. Hilder, Mr. W. A. Bradford, and Mr. E. J. Alcock be appointed directors in their stead. He argued that there was no practical course but to get rid of or modify the business agreement with Messrs. Pigou, Wilks, and Lawrence, and to give the company any chance of succeeding. Numerous accidents due to mismanagement had shaken public confidence in the excellence of the material offered by the company. The Chairman defended at great length the agreement with Messrs. Pigou, Wilks, and Lawrence, contending that it was strictly based upon sound commercial principles; and replied to the charge of mismanagement in connection with the accidents which had taken place. Reviewing the financial position of the company, he maintained that the directors had done their best in the face of many difficulties, and concluded by a pungent criticism upon the course which Mr. Pennell had pursued in this matter. There was a stormy scene when Mr. Pennell, in replying, described Lord Brabourne as a “mushroom peer,” an expression, which, however, he withdrew when loud deprecatory cries were raised; but Mr. Pennell added that if report spoke truly Lord Brabourne had extorted his peerage from an unwilling Premier, a statement which seemed to afford to his lordship a considerable deal of amusement. On a division the resolution was rejected by an overwhelming majority. Mr. Pennell demanded a poll, when this was ordered by 630 votes against 4707. A vote of thanks to Lord Brabourne brought the proceedings to a close.

**METROPOLITAN BRUSH ELECTRIC LIGHT.**—At the meeting on Tuesday the report of the committee of investigation narrated the history of the company, and said that the carrying out of the provisional orders which the company had obtained had only involved further loss, and would probably necessitate the calling up of the remainder of the capital. It also stated that under the directions of the committee a winding-up petition had been lodged. The Chairman (Mr. J. H. Borer) said that the principal point upon which he and his colleagues differed from the committee was with regard to the Holborn contract, which he said could be carried out at a profit, and the opinion of experts was to that effect.—Mr. Peebles, the Chairman of the committee, moved the adoption of their report, and the motion having been seconded by Mr. Stewart, in the course of the discussion which followed, Mr. Robert Hammond deprecated the winding-up of the company, because it would have a depreciating effect on all other electric lighting companies. He believed in the future of the electric light if it could be carried on on an extensive scale and in house-to-house lighting, and in that way he wished his company—the Hammond Electric Light and Power Company—to spend 100,000, because he was sure that the result would be a success. In order to promote this object he was willing to take over the assets of this company, which consisted of their cash at the bank (30,000), the plant and machinery, and the provisional orders for whatever they were worth, and to give 30,000 cash in return, or 30,000 in debentures, and 30,000 in deferred shares in the Hammond Company.—Mr. Broun said that this offer had come upon them at the last moment, and urged the shareholders not to accept it, arguing that it was made with the view of stopping litigation between the two companies. The motion was carried, after a prolonged discussion, and it was resolved that the company should be wound-up voluntarily, and liquidators were appointed.

**POLCREBO MINE.**—The several points in operation at this mine are opening up satisfactorily and equal to the report which was furnished last week. Next week a full report will be sent to the Journal.

**WHEAL BENNY.**—Shareholders who may have been led to fear, from a communication in last week's *Mining Journal*, that sufficient care had not been taken to secure the property which this company propose to work, may be referred to the letter of Sir Charles W. Crawford, the Chairman, in another column.



## WATSON BROTHERS' MINING CIRCULAR.

WATSON BROTHERS,  
MINEOWNERS, STOCK AND SHARE DEALERS, &c  
1, ST MICHAEL'S ALLEY, CORNHILL, LONDON

We received many communications on the same subject that "X" writes upon, but had not time to notice them last week. There can be no doubt whatever that the present depressed state of the mining market has been brought about mainly by the system adopted by some people in advertising prices. In former times those connected with mining did all in their power to support it, as we have continued to do, but the system pursued by some of the advertisers disgusted *bona fide* holders, and brought many mines to grief. The public buy in rising markets as a rule, and avoid those which seem to be constantly falling, and by some advertisers nothing was allowed to rise for long.

A discovery might be made in a mine and the prices of shares might rise—say, for the sake of argument—to 11. per share. An advertiser not having a share in the mine nor even one share *bona fide* for sale might advertise 100 shares at 19s. If he got an applicant and sold 100 shares at this price he would be a "bear" of them, and his interest would then be, by every means in his power on the market and by advertising them at still lower figures, to get down the price, and if he succeeded in getting them down to 15s. by account day his profit would be 4s. per share, or 20%. Yet wonder was often expressed to see mines improving, and yet quotations for shares going down daily! Of course there are *bona fide* advertisers as well as others—those who have the shares really for sale, and sell and deliver them. We only refer to part of a system that we know has been extensively adopted, and which it is also well known to the mining community has more than anything else brought about the present position of affairs in *bona fide* mining speculations.

We think, therefore, the resolution adopted by all parties not to advertise prices at all is an excellent one, and will result in a better tone to the market and bring in more buyers. All we want for old producing mines is a better price for metals, and for young and promising speculations one or two good discoveries.

If the negotiations which have been going on for some months at Parys and Mona result in success, we believe the amalgamated mines would form one of the finest properties ever offered to the public, irrespective of mining. This is the opinion of those well qualified to judge, and we understand meetings will shortly be held to lay the present positions of affairs before the shareholders. The delay has not arisen on the part of the directors of either mine.

The Commissioners of Woods and Forests are not content with dead rents and heavy royalties, but they insert a clause in their leases—that "the Crown shall be entitled to one-fourth part of any consideration, or of the value in money of any consideration, to which the lessee may become entitled in his assigning or otherwise disposing of or dealing with the property. That is to say, if A, B, or C take a lease at a royalty of 1-12th and a dead-rent merging in royalty, and they make a discovery upon which they can sell the mine or their interest in it for 10,000l., the Crown come down upon them for 2500l."

The points in operation at Wheal Crebor having further improved to 62 tons per fathom as the aggregate for copper ore and 6 tons of munda.

We are in expectation of a good discovery at West Crebor before long, but do not like to say much about it at present, having so frequently been disappointed.

A Shareholder (West Kitty) we can only answer privately.

On the Stock Exchange the tone is decidedly firmer, and prices generally show some improvement, the only important exception being in Mexican railway stocks, which have further declined; the traffic receipts continue to show heavy decreases; the ordinary stock has been down to 44½, being a fall of 100l. per cent. since the corresponding period of last year. Grand Trunk stocks are all considerably higher, the last traffic return giving a good increase, the Second and Third Preference have risen 3 to 4 per cent. English railways were dull at the opening of the week, but close decidedly firmer, Brighton, A, stock showing a rise of over 3 per cent. American railways are all better, and it is generally hoped that the lowest prices in these stocks have been seen. Foreign stocks are steady. Egyptians have been dull, but close better. Among miscellaneous securities Brush shares are better. India rubber shares are 4½ down on the unsatisfactory dividend. The English funds are firm.

FROM MR. JOHN B. REYNOLDS.—The political outlook is so threatening that capitalists are naturally cautious in their movements. It is to be regretted that so much is made of incidents, important no doubt, but which cannot impede the onward march of events. The order of the day is "progress." Fresh openings for trade are being secured, and business men have no anxiety for the future. It appears to us that strong evidence of the satisfactory state of trade is to be found in our railway traffic returns. Recently there has appeared to be a slight check; but all rapid progress is succeeded every now and then by a certain amount of re-action.

The reaction which we have had will only be followed by further improvement. The progress of our rails and banks is splendid. The metal trade, however, is also of paramount importance to this country, and, considering the quietude of business and the supply of tin, it is remarkable that this metal is only about 10s. per ton below the average of the last 35 years. And it is stated that the supplies from the Straits must fall off. If this be so, Cornishmen will not have long to wait for 7½ per ton again for their produce. The future most certainly is anticipatory with confidence; if not, who can account for the high prices which our dividend mines still command, and the eagerness evinced to obtain good properties in paying localities? Low-priced shares in progressive mines are in good demand, especially in cases where the management is on the most approved principles. The St. Agnes mines, including East Blue Hills, Wheal Coates, Polbreen, and others find favour. Considerable attention is being concentrated upon Polbreen, and this is natural, seeing the singular resemblance of this mine to West Kitty and Wheal Kitty. Now, inasmuch as a good mine is good for everybody, let all rejoice in every success, and endeavour to prevent failure in every possible way. West Polbreen and Wheal Coates meetings will be held next week; no doubt they will be full of interest. Shareholders should muster in good force. At Wheal Coates such is the improvement in financial position that no call is expected.

NEW YORK METAL EXCHANGE MARKET REPORT.—Jan. 26: Iron has again been dull but steady all week, closing nominal. For the early part of the week tin was feverish and declining, but has since recovered, closing rather firm, though quiet on the delay of cable advices. Copper has been little more than nominal all week, closing unchanged. The total sales are about 200,000 lbs. Lead after opening dull but steady, because sudden very weak, and sales of 250 tons were made at from 4½s. down to 4s.; closes very much depressed. Spelter has been utterly featureless, and at the close shows no revival, although the tone is fairly steady.—Feb. 1: Iron steady, closing firmer. After second call \$20 50 bid for December. Tin easier; sale were:—On first call 10 tons Straits, February, at \$18 30; on first call 10 tons Straits, February, at \$18 30; between call 10 tons Straits, March, at \$18 30. Copper steady. Lead dull. Spelter nominal. Average prices, Feb. 1, 1884:—No 1 pig iron, spot, \$24 bid. \$25 asked; Straits tin, spot, \$25½ asked, futures, \$21 asked; Lake copper, spot, \$118½ asked, futures, \$118½; Baltic, spot, \$117 asked, futures, \$117; domestic lead, \$4½. With regard to the domestic markets the report from Philadelphia (Jan. 31), states:—Pig-iron: Business drags a little, and while the prices are unchanged the feeling is less buoyant than it was, and buyers less inclined to make bids except for small lots.—Steel rails: Market quiet and steady. In manufactured iron there is more business doing, and prospects are favourable for a steady demand, but prices are weak, and on the whole average lower than before the holidays. Changes of improvement not encouraging for the near future, as competition is very sharp. Old rails steady.

"DR. LOCOCK'S PULMONIC WAFERS I have always found give relief in the distressing attacks of asthmatic coughs, and in the progressive stages of consumption." (Signed) J. Spencer, M.P.S., 225, Great Colindale-st., Birmingham. They instantly relieve and rapidly cure asthma, consumption, bronchitis, coughs, colds, shortness of breath, phlegm, pains in the chest, rheumatism—administered pleasantly. Sold at 1s. 1½d. and 2s. 6d. per box by all druggists.

HOLLOWAY'S OINTMENT AND PILLS.—Rheumatism and rheumatic gout are the most dreaded of all diseases, because their victims know that they are safe at no season, and at no age secure. Holloway's ointment, after fomentation of the painful parts, gives greater relief than any other application; but it must be diligently used to obtain this desirable result. It has been highly commended by rheumatic subjects of all ages and of both sexes, for rendering their attack less frequent and less vigorous, and for repressing the sour perspirations and soothing the nerves. In many cases Holloway's ointment and pills have proved the greatest blessings in removing rheumatism and rheumatic gout which had assailed persons previously and at prime of life.

## THE OURO PRETO GOLD MINES OF BRAZIL (LIMITED).

The LIST of APPLICATIONS for SHARES will CLOSE on FRIDAY NEXT, the 22nd inst.

53,400 SHARES OF £5 EACH ARE OFFERED FOR SUBSCRIPTION.

## THE OURO PRETO GOLD MINES OF BRAZIL (LIMITED).

EDMUND A. PONTIFEX, Esq., (Chairman of the Cape Copper Mining Company, Limited), CHAIRMAN.  
\*M. H. BELLOC, 78, Rue de Courcelles, Paris.  
Sir CHARLES CLIFFORD, Hatherton Hall, Stafford.

\* Will join the board after Allotment.  
MANAGERS—JOHN TAYLOR AND SONS.

OFFICES—6, QUEEN STREET PLACE, LONDON, E.C.

Prospectuses may be obtained, together with forms of application for Shares, at the offices of the company.

## THE OURO PRETO GOLD MINES OF BRAZIL (LIMITED).

Since the prospectus was issued advices have been received from the manager on the spot, announcing a new remittance of gold of 3100 oitavas, valued at about £1400. He states that the mines look well, and that large reserves of ore are accumulating in the Passagem workings.

## Mining Correspondence.

## BRITISH MINES.

BEDFORD UNITED.—H. Trease, Feb. 12: We have not yet intersected any lode in the cross-cut at the 115 west, but are hoping to find something daily. In the 103 west the lode is worth 6½ per fathom, or 2 tons of ore. The tribute department on this lode is about what it has been for some time past. At McCallan's engine shaft we have had several drawbacks of late owing to breakages in connection with the drawing-lift, the wind-bore and H-piece having been broken in the course of blasting. In the 62 west the lode is 2 ft. wide, of a promising character, composed of capel, munda, and ore. The stopes behind the end is worth 6½ per fathom, or 1 ton of ore. In the 62 east the lode is promising. The stopes behind the end is worth 7½ per fathom, or 2 tons of ore. In the 42 east the lode is strong and masterly in appearance, and producing saving work for ore and munda. No. 1 stopes at this level is worth 20½ per fathom, or 6 tons of ore. No. 2 stopes is worth 9½ per fathom, or 2½ tons of ore. The tribute pitches are yielding a fair quantity of ore. I estimate to sample next time about 200 tons of ore.

BWICH UNITED.—W. Northey, Feb. 14: I have decided to employ four men to cost and open on the lode at surface, where we may fairly expect to cut it rich in silver-lead ore in a few days. There has been no change worthy of remark in any point throughout the mine since my last advice. The machinery is in good order.

CARN CAMBORNE.—W. C. Vivian, Feb. 14: I have to inform you that in the 105 east the lode has been greatly reduced in size by a sudden turn in the direction of the granite wall on the south, but I hope that it will, on our driving further, resume the good size and excellent character which it had when I wrote you last. In the 105 west the lode is still of good quality associated with congenial spar, and the appearances indicate further improvement. In the 40 west the north lode is without alteration worthy of particular notice.

CASHWELL.—John Peart, Feb. 9: The two headings in copper haze west end are looking a little better, as we get more into the sill; the rise we made from the drift in the vein to the top of this stratum did not give us a favourable impression. But the way the headings are opening out is more encouraging, in places we have good ore, and in other places only poor; but so far as proved they will average 1 ton of lead ore per fathom. The drift in copper haze going east is still hard and very little vein. In the rise in slaty haze east end there is a fine vein, but as yet not very much ore.

COED-Y-FEDW AND PANT-Y-BWARTH.—R. Prince, Feb. 14: The 90 west 1: worth ¼ ton of lead per fathom. In the roof the lode is worth 1 to 1¼ ton per fathom, and the 112 tons per fathom. Trevathorn's string, ¼ ton per fathom. The 12 north, driving to the Cefn-Bachan lode, is very hard, but indications to drive are favourable.

D'ERESBY MOUNTAIN.—J. Roberts, Wm. Sandoe, Feb. 13: There is more lead in the shaft from surface than has been seen there since we commenced sinking, and as there is a good mixture of lead and blende in the rise at No. 4 there is reason to expect that it will continue till we get through. The shaft at No. 4 is looking a little better for lead. The rise at No. 5 is much the same in value and appearance as for some weeks past.

DEVON FRIENDSHIP.—F. R. W. Daw, W. Gill, Feb. 14: The ground in the adit end, west of Kent's shaft, is a little easier for driving. At this point the shaft is having a branch which is making towards Kent's main lode in a north-western direction. We expect next month to cut Kent's main lode, which we hope will prove as productive for copper ore as it did east of the cross-cut. All the points on Bennett's lode are without change since we reported to you last week.

DEVON GREAT CONSOLS.—Isaac Richards, Feb. 10: Wheal Josiah. The casing and dividing the Count-house shaft from the 144 to the 160 has been completed, and the men are now engaged cutting off top preparations to deeper shafts. In the 150 shaft, in the 137 east, the lode is from 4 to 5 ft. wide, and worth 1 ton of copper ore and 2 tons of munda per fathom.—New Shaft, New South Lode: In the 205 east the lode continues without any important alteration, yielding good stones of copper ore and 4 tons of munda per fathom.—Railway Shaft: In the Railway shaft, sinking below the 205, the ground is scarcely so favourable for exploration. In the 160 east, on the south part of the lode, the lode is from 2 to 3 ft. wide, and yields small quantities of copper and munda ore. Watson's shaft, the engine shaft, having reached a sufficient depth for another level, the men are now engaged casing and dividing the shaft from the 101 to this the 112, preparatory to driving east and west on the course of the lode, and judging from the appearance of the lode at the deepest point reached, and also for several fathoms above, where it is worth 3 tons of copper and munda ore per fathom, we expect to lay open some good productive and profitable ground as these levels are extended in these directions. There is no important alteration at any other points of operation throughout the mines.

DEVON GREAT UNITS.—Isaac Richards, Feb. 14: In the 120, east of Willesford shaft, the drive is being carried for more speedily progress by the side of the lode. In Pengelly's rise in the back of the 120, west of Willesford shaft, the lode continues to yield 2 tons of copper and munda ore per fathom. In the 104, west of Willesford shaft, the lode from 3 to 4 ft. continues good, and is yielding 4 tons of copper and munda ore per fathom. There is no alteration of importance in any other part of the mine.

DRAKEWALLS.—Moses Bowden, Feb. 14: The cross-cut south at the shallow adit level, west of engine shaft, has communicated with the great Gundrys, and the lode is now being driven up in the back of the 40. The rise in back of the 90, west of engine shaft, is being pushed on as vigorously, and we expect to complete the work in about a month from this time, when we shall have a good piece of tribute road laid open at this point. All our pitches and bargains are yielding their usual quantity tinstuff, and every effort is being made to increase the returns, but we cannot expect to do so to any extent until after we have completed the following work now in hand—rise in back of 90, rise in back of 90, and rise in back of 40 to shallow adit.

EAST BLUE HILLS.—S. Bennett, W. K. Mitchell, Feb. 13: On Monday the miners succeeded in reaching the end of Gumpas' adit south towards the Wh. A. Kitty lode, and find it extended 40 fms. south of the Pink lode towards the former. The level is driven on a small cross-course in a soft white kila. There is now new feature to notice in the sinking of the shaft below the adit. One of the stopes on the north part of the lode has become exhausted; the other three are just the same as last reported, and worth in the aggregate 20½ per fm. EAST BRADON.—W. G. Jones, J. Kellow, Feb. 14: The 120 cross-cut is being continued with satisfactory progress, and is reset to six men, at 9½ per fathom. During the past month we have had some patches of elvan similar to that found in the adjoining mine, and from the present character of the ground we consider there is a probability of our being near another lode.—South Lode: In the western drive from rise in back of the 70 the lode is 1½ ft. wide, composed of good quality copper ore, with a good deal of munda and peach; reset at 4½ per fathom. In driving east from same rise the lode has not been fully taken down, but when cut into near the end it broke some very good stones of ore; this is also very promising, and is reset at 5½ per fathom. There are three tribute pitches; reset to six men, at 13s. 4d. in 11.

EAST LONG RAKE.—H. B. Vercoe, T. Davies, Feb. 11: Since my last report we have commenced driving the 40 north from rise on the new north and south lode; it already improves, the ground becoming softer, lode larger, and producing more lead, it looks as if we are going to open out an entirely new mine in this direction, the lode being entirely unworked beneath the old men's workings. In the 40 driving west on the middle lode the ground has eased a little, and the lode produces occasional stones of ore. This end whether productive or not must be pushed on to the new lode for the purpose of ventilation. The late heavy rains have increased the water in the mine considerably, but so far have not prevented working in the bottom level.

GAWTON.—Geo. Rowe, Feb. 9: The lode in the 117 east has improved within the past week, and looking exceedingly kindly, mixed with sulphur and arsenical munda, and yielding 1 ton of copper ore per fathom. No. 1 stopes, in the back of the 117 east, is yielding 5 tons of munda and ore per fathom. No. 2 stopes, in the back of this level, is yielding 5 tons of munda and ore per fm. The lode in the 105 east is yielding 7 tons of munda and ore per fm. The lode in the rise in the back of the 65 east is 3 ft. wide, and yielding 5 tons of munda and ore per fathom. The stopes in the back of this level are yielding 6 tons of munda and ore per fathom, and intermixed with some good quality copper ore. The stopes in the back of the 52, east and west of cross-cut, are yielding 3 tons of munda per fathom. We have commenced to drive the 70 west, on the south part of the lode, which is showing a very promising appearance, and yielding fully 6 tons of munda per fathom. No. 1 and 2 stopes, in the back of the 70 east, are yielding 10 tons of munda per fathom. We hope to ship on Monday next 50 tons of prime arsenical ore.

GORSIEDD AND MERLLYN.—W. T. Harris, Feb. 14: In the 70 east the lode continues to increase in width and productivity, and promises well; the ground is rather easier for progress. The pitch west is yielding lead in paying quantities.

GREAT HOLWAY.—W. T. Harris, Feb. 14: Roskell's Shaft: In the 35 north we have intersected several branches of spar mixed with lead; clear evidence that the lode is in close proximity, and when discovered there is no doubt it will be found rich.—Level: Engine Shaft: No. 1 pitch in the back of the 30 east is producing 10 cwt. of lead and 1 ton of blende per fathom. The same value will apply to No. 2 pitch in the back. In the rise in the back of the 60 east the ground is more cherty, and contains a little lead. No. 1 pitch maintains the value last reported—4½ tons lead and 1½ ton of blende per fathom. No. 2 pitch is yielding 5 tons of lead and 1½ ton of blende per fathom. No. 3 pitch is worth 15 cwt. of lead and 1½ ton of blende per fathom. No. 5 pitch is producing 12 cwt. of lead and 2 tons of blende per fathom. No. 9 pitch has slightly improved, now

worth 1 ton of lead and 1½ ton of blende per fathom. No. 10 pitch in the back of the level is yielding 2 tons of lead and 1½ ton blende per fathom.—Office Shaft: In the 60 east the pitch in the back is producing 10 cwt. of lead and 1½ ton of blende per fathom. No change in any other point to-day. We have sampled 15 tons of blende, and to-morrow shall sell 40 tons of lead ore of superior quality.

GREAT LAXEY.—P. Redcliffe, Feb. 13: The lode in the 247 end north is of more encouraging appearance than for some time past, and it is much to be hoped that it may now have a run of better ground; the present value is 10½ per fathom. The short cross-cut at the 247, north of engine-shaft, is driven through the lode, which proves to be of no value at that point, and the driving is now being directed north upon its course. The 235 end north is now in a large lode consisting almost entirely of spar, precisely the same as in the end driven from Dumbell's shaft towards it, and from which it is now but a few fathoms distant. The winze in the 130 north is holed to the 145, and the men placed to stop from the top of the winze, where the lode is not very good to start with, but will soon get down to a richer lode.—Dumbell's: There is an improvement in the 230 end, it being worth at present 20½ per fathom. Since last report there has been a lode in the 155 end worth about 12½ per fathom. The 170 end has also been of much increased value (40½ per fathom) until the last day or two, but there is at present a bar of ground, which has discovered the lode. These are the only changes of note throughout the mine.

GREEN HURTH.—Jas. Polgreen, Feb. 7: The bottom level north is worth 2½ tons per fathom. No. 1 stopes is worth 2 tons per fathom. No. 3 stopes is poor, in a plate bed. No. 3 stopes is worth 2 tons per fathom. No. 4 stopes, north of winze, is worth 4 tons per fathom. Stopes in back of Standage level is worth 3 tons per fathom. The 50 level vein, north of heave, is worth 2 tons per fm. Dressing going on well. We have completed first 100 tons of lead ore.

HEALEYFIELD.—J. Trease, Feb. 8: The sinking in the Whitwell shaft has been discontinued until the cross-cut is driven from the Derwent level to the shaft, consequently we have stopped the engine to reduce expenses until the connection by cross-cut is completed. In the Derwent level we are now up to the sumpt that leads to the Whitwell shaft, but the sump has run together. We will try and run it through to get air to drive the cross-cut to the shaft. The distance cleared and retimbered in the Derwent level is 650 fms. from its entrance. The tribute stopes in the mine are yielding their usual quantity of ore.

HINGTON DOWN.—Thomas Richards, Feb. 13: In the 52, east of the engine-shaft, the lode is, for the present, somewhat disordered. There is, however, a small branch coming in from the north side of the level, which will probably unite and improve the lode a short distance beyond the present end. In the 40 east the lode continues of much the same character, containing capel, quartz, arsenical munda, &c., and in places good stones of copper ore.

KIT HILL GREAT CONSOLS.—Isaac Richards, Feb. 14: The ground at the tunnel level is not at present so favourable for exploration as for some time past, and progress is consequently not so good. The distance driven during the week is 1 fm. 4 in. In the north engine-shaft sinking below the 88 the lode is 5 ft. wide, composed of capel and quartz, with peach, munda, blende, and a little tin ore. In the 33 east the lode is from 4 to 5 ft. wide, of a very promising character, and is yielding a little tin ore. In the 88 west the lode is 5 ft. wide, also very promising, and yielding a little tin ore.

LEADHILLS.—A. Waters, Feb. 14: Brown Mine: Gripp's adit, north of Glen-gowan engine-shaft, is driven 274 fms. 5 ft.; lode in forebreast 6½ ft. wide, composed of strong quartz, but without ore to value. The pitch in 20 north by three men, at 10s. per ton; worth 35 to 30 cwt. lead ore per fathom.—George Rust Mine: Gripp's going north of Rust's cross-cut is driven 69 fms. 4 ft. 3 in.; lode composed of quartz, calc spar, and stones of lead ore.—Brown's Mine: We have men cutting ground at the 100 preparatory to deepening Gripp's engine-shaft below that point. The 100 south of the above is driven 69 fms. 5 ft. 9 in.; lode in the end 3 ft. wide, composed of the usual matrix, but does not at present contain sufficient ore to value. No. 1 stopes above said level south is worth 45 cwt. lead ore per fathom. No. 2 south 60 cwt. per fathom. No. 3 south 25 cwt. per fathom. The 55 north of shaft going out as a trial level is driven 35 fms. 9 in.; lode in forebreast 4 ft. wide, quartz and stones of lead ore. The 45, south of Wilson's shaft, is driven 19 fms. 2 ft.; lode 4 ft. wide, there being rib of ore 3 in. wide along the bottom of the level in the last 2 fms. driven, and which looks like improving as we advance. No. 1 stopes in 55 south of Jeffrey's shaft is worth 25 cwt. of lead ore per fathom. No. 2 stopes south is worth 25 cwt. per fathom. No. 3 stopes south is worth 30 cwt. per fathom. No. 4 stopes south of ditto 65 cwt. per fathom. The stopes below 70, south of Wilson's shaft, is worth 35 cwt. per fathom. The stopes above said level south is producing 35 cwt. per fathom. The stopes in same level, north of the shaft, is worth 45 tons per fathom. The stopes above this level, north of Hope's winze, is worth 3½ tons per fm. The stopes south of the winze is worth 4½ tons per fathom. The stopes below 41, north of Wilson's shaft, is worth 5½ tons per fathom. No. 1 stopes above 41 north is worth 25 cwt. per fathom. No. 2 stopes north 2½ cwt. per fathom.

Gripp's adit, south of Wilson's, is driven about 30 fms. 4 ft., and the end is now 70 fms. 1 ft. beyond the junction of D-bell's vein. Lode in forebreast, 1 ft. wide, carrying two good wads, and charged with quartz and bits of ore of a promising character. Stopes above this level, south of shaft, by four men, at 40s. per fathom, and 10s. per ton; worth 40 cwt. per fathom. The top of Jeffrey's engine shaft is at Gripp's adit; and you are aware that all the pumping and winding through it is done by an hydraulic engine. Having now to sink below the 100 fm. level, the said machine would in a short time fail to give us the useful motive power, consequently men are now engaged cutting ground, and opening out in the adit level adjoining the shaft, where it is intended to put up a 20 in. diameter 4 ft. pump. The shaft, where we have ready on the mine—Jeffrey's Vein: The stopes below 10 fm. level, west of junction, is worth 25 cwt. lead ore per fathom; stopes in 23 west of 10 fm. level is worth 20 cwt. per fathom. The new 25 h. p. engine, by Fowler and Co., to go up at Red's shaft, is on the mine, and no time will be lost in getting same into place and at work.

LLANGELYNIN.—O. Evans, Feb. 14: I am glad to note that the lode in end of No. 1 level has considerably improved during last week both in lead and blende, and is letting out water freely. There is no change in the north end of No. 2 level, and the stopes in back is the same character also. The south end is in a rich body of nearly pure blende, with an increasing yield of lead also. When we have driven the cross-cut from the graphite lode in No. 3 level into this lode we may fairly calculate on drawing many thousands pounds' worth of zinc ore from this point besides lead and copper.

LOVELL (THE).—Joseph Frisk, Feb. 13: Engine-Shaft: The lode in the 14, east of engine-shaft, is 7 ft. wide; worth 6½ per fathom. The lode in the winze sinking in the 14, west of shaft, is 5 ft. wide; worth 7½ per fathom.—Air Shaft: The lode in the shaft sinking below the 14 is 5 ft. wide; worth 8½ per fathom. The lode in the 14, west of shaft, is 6 ft. wide; worth 10½ per fathom. The lode in the stopes in the back of the 14 is 5 ft. wide; worth 8½ per fathom. The mine is opening out exceedingly well, and I hope shortly to be in a position to meet the whole of the expenses by monthly sales of tin.

MARK VALLEY.—Wm. George, Feb. 14: In the cross-cut north from Beltingham's shaft, at the 25, several branches have recently been met with, which have rather impeded the progress of driving; but beyond these the end appears to be entering the same congenial channel of ground as in the level over, before reaching the main part of the lode, which is expected to reach at the 25 or this, but now find the underlay is not so great below as above the 15. This we consider favourable for an improvement in its value as depth is obtained. There are three stopes being worked in the back of the 15 by 12 men, where the lode is the depth is turning out very satisfactory. The stamps are being kept supplied at the full rate we can work the pumping gear attached; and, considering the very unfavourable weather, good progress is being made on the dressing floors.

MILLANAR.—John Gilbert, Feb. 13: We have passed through the elvan course of the 20 cross-cut, south of Gundry's shaft. The ground is again a little harder for driving, and mixed with veins of munda and blende. The ground in the 70 cross-cut, driving north of main lode, is mineralised throughout, and there is an increase of water coming out of the end. The 80 east of shaft, on the south part of the lode, is yielding ½ ton of copper ore per fathom. In the 100 west of shaft the lode is 4 ft. wide, yielding 2 tons of ore per fathom, and occasional stones of tin. The rise in the back of the 110 west of shaft is still yielding 3 tons of ore per fathom and some rich work for tin. In the 110 east of shaft the lode is 4 ft. wide, and yielding 2 tons of ore per fathom. The rise in the back of this level is also yielding 2 tons of ore per fathom. The lode in the 120 east of shaft is 3½ ft. wide, yielding 1 ton of ore per fathom, and looking promising for an improvement. In the 120 west of shaft the lode is 1 ft. wide, and yielding 1½ ton of ore per fathom. The rise in the back of this level is yielding 2 tons of ore per fathom. There is no particular change in any other part of the mine. We shall sample on Tuesday next about 600 tons of copper ore.

MID-DEVON COPPER.—James Seill, Feb. 9: A Shaft: Sunk by 12 men (three men with rock-drill and nine by hand-labour) 1 ft. 7 in.; distance below the 80 is 8 fms. 3 ft. The character of the rock is unchanged, excepting that its cleavage is more regular, which is a favourable feature; influx of water is still great, and until it subsides cannot to any extent increase progress.—O Shaft: Cross-cut north from extreme end of 50 east, worked by four men and four boys, a 11 yields 2½ tons of good quality ore per cubic fathom. The strata in eastern side is intermixed with more capel, which makes it harder, and consequently more spare for progress. In the highest point we have intersected another branch of yellow ore, which apparently trends down to the east of this capel, which, if it continues in that direction, will make it a very important feature. Shaft proved next week.—Surface: Machinery throughout is working well and doing good duty.

NEW TERRAS.—J. D. Fraser, T. Edwards, Feb. 14: The ground in the bottom cross-cut at the engine-shaft is much softer, but is still letting out a great deal of water. There are branches still crossing the end. We hope to reach the winze after driving about 4 fms. more. The new lode still continues to yield rich tinstone. Yesterday we set a pitch in the back of adit to four tributaries, at 13s. 4d. in 11. We continue to push on the surface operations as fast as the weather will permit. The machinery is all working well.



**NEW CARADON.**—N. Richards, Feb. 13: We are not yet through the choke in the engine-shaft, which is now down about 15 fms. below surface, and we hope to reach the 20 in about four weeks from this time. We have suspended the driving west on Kitt's lode for the present, or until we reach the 20, as it will cause some hindrance in drawing the stuff, &c. The machinery and pitwork are working well.

**NEW WEST CARADON.**—N. Richards, Feb. 13: In the 38 cross-cut we are opening out both east and west on the last lode out, which is about 1 ft. wide, and has a very kindly appearance, producing a little copper ore; but it is unsettled, being so near the cross-course. Nor do we expect to get any improvement until we get away from the influence of the same. Between this and No. 5 lode we have passed two branches, one of them about 7 in. wide and ore to be seen in each of them, one of which, I think, will unite with the last lode out, as this level is extended east. No. 5 lode maintains the same kindly appearance, producing a little rich copper, but not sufficient to value.

**NORTH BLUE HILLS.**—S. Bennett, Feb. 13: The north lode in the adit west varies in width from a few inches to 1 ft., without much alteration in its composition.

**NORTH GREEN HURTH.**—J. Polglase, Feb. 7: The deep cross-cut is not letting out so much water as last week, the appearances are much the same. The vein in south end from deep level is very regular in the back of the level, which is in haze. No change in the new ground.

**NORTH PENSTRUTHAL.**—S. Davey, Wm. Polkinghorne, Feb. 14: Good progress is being made in sinking Highborough shaft below the 150. The lode in the 150 east end is larger as we leave the vein, and also improving in composition for the production of tin. The other points are in character and composition as last reported.

**NORTH TREKERRY.**—Pryor and Son, Feb. 14: The men driving the deep adit cross-cut north of Scorrer Consols engine-shaft are making better progress; the end is still letting out a quantity of water, and the ground continues to be strongly mineralised. No. 2 lode driving west of this cross-cut is improving, and is now worth 17l. per fathom, and No. 1 lode, east of cross-cut, is worth 19l. per fathom. From these points we have this day drawn to surface another splendid pile of rich tinstone. The men sinking Jabez's shaft are also making good progress, and we believe that the communication will be effected to the deep adit level within the time before stated. The severity of the weather during the past week has much improved our surface operations, but we are pleased to state it is again favourable, and we are pushing the work with all possible speed. The winding-engines are completed, and should the weather continue fine, in about a week or 10 days the mason-work will be in course for them. All other work is being carried on as fast as possible.

**OKEL TOR.**—H. Bulford, J. Rodda, Feb. 14: The part of the lode carried in driving the 50 east is looking more promising, and the ground is moderately easy. There is nothing fresh in the cross-cut south at this level, but from the nature of the ground, which is carrying strings of spar and mundle, we think we are near the intermediate lode. The cutting of the tip-plate at the 90 is progressing favourably, and the lode is very large, producing good stones of copper ore and tin, and is otherwise looking exceedingly promising. The winze in the bottom of the 80 is being continued by the side of the lode.

**PANDORA.**—W. H. Horne, Feb. 14: The 45 fm. level is looking very promising, and is at present producing saving work for lead and blende. I have taken the men from No. 2 stop, and am pushing the drive of this end as fast as possible. No. 1 stop, in the back of this level, is worth 2½ tons of lead per fathom. The winze sinking below the 33, on Goddard's lode, is looking well, and is worth 3½ tons of lead and blende per fathom. The tribute pitches are looking just the same as for some time past. Owing to the incessant rain we have not been able to get on with our outside work to rods, &c., but today we have had better weather, and with a continuation of such for a day or two we shall complete the job. The advantage of every fine hour is being taken.

**POLROSE.**—W. Bennett, Feb. 14: In the past week we have made good progress in driving the 122 east, where the lode is still about 3 ft. wide, composed of peach, spar, and a little mundle, with tin throughout, and occasionally rich stones of tin. The lode in this level has a better composition, and produced more tin than in any of the upper levels, and there is good reason to expect further improvement. We have not yet cut the lode in the western cross-cut, but are daily expecting to do so.

**PRINCE OF WALES.**—S. Roberts, Feb. 13: In the 102 east the men are now engaged clearing the level of attle, in order to take down the lode, which, as far as can be seen, has a very promising appearance. The men in the 102 west are still stopping the back near the end; lode maintains its large size, worth 3 tons of copper ore per fathom, and fair stamping work for tin. The lode in the 90 east is looking much better, being now 4 ft. wide, worth 2 tons of rich copper ore per fathom. The lode in the 90 west is also improving in value and appearance, 4 ft. wide, worth 3 tons of copper ore per fathom, and usual value for tin. All other points in operation are without any change to notice since last reported.

**ROMAN GRAVELS.**—Arthur Waters and Son, Feb. 14: The 125, south of new engine-shaft, shows a lode 5½ ft. wide, worth 1 ton of lead ore per fm. The 110 south is in a lode 3½ ft. wide, worth 4½ tons of lead ore per fathom, and improving. The 95 south is 2½ ft. wide, producing 2 tons per fathom. The lode in the 80, north of old engine-shaft, is at present 2 ft. wide, and producing good stones of lead ore. The stopes are producing the quantities of ore stated in recent reports. We have today sold 250 tons of lead ore for 1767l. 16s.

**RUSSELL UNITED.**—John Bray, Feb. 14: The men at Matthew's shaft are busily engaged fixing the lift in the eastern about 14 fms. below the 97, and doing all necessary work to commence sinking this shaft as fast as possible. Nothing new at Stephen's engine-shaft.

**SINCLAIR LEAD AND BLENDE.**—W. T. Harris, Feb. 14: Wacoa Shaft: The 60 level south—the great improvement reported last week is maintained. Some splendid stones of lead have been taken out, and the ground in every respect indicates an early and further discovery. All other points throughout the mine without change calling for remark.

**SOUTH OGDURROW.**—William Rich, William Williams, Humphrey King, Feb. 13: We have holed the winze below the 80, east of King's shaft, and have begun to stop east of the 70, per fathom, and the ground easy for working. The 80 end, east of Plantation shaft, is yielding saving work for tin. The ground is favourable for driving in the 80 cross-cut north going towards the copper lode. The lode in the winze below the 70 west is worth 5l. per fathom. The 70 end, east of King's, is worth 5l. per fathom. The stopes in the back of this level is worth 12l. per fathom. The 60 end east is worth 15l. per fathom. The stopes in the back of this level is worth 12l. per fathom. The 50 end east is worth 12l. per fathom, and the stopes in the back of this level is worth 12l. per fathom. The 40 end east is worth 6l. per fathom, and the stopes in the back of this level is worth 12l. per fathom. The 30 end west is unproductive. The 20 end east is worth 7l. per fathom. Two stopes in the back are worth 10l. and 15l. per fathom respectively. We have suspended the 42 end, west of Marshall's shaft; the lode has entered the kilas or slate-rock, and is unproductive. The ends driving west of this shaft are not very productive at present, but the stopes and pitches are yielding fairly well.

**SOUTH DAREN.**—John Mitchell, Feb. 14: In the 130 end east we have stripped down the lode, which is large, and worth 1½ ton of silver-lead ore per fathom. We have not made much progress in driving this end this week, as we have had several breakages in the shaft, and have had the men timbering the 40 and the 70. The 130 west has improved a little since last report; the lode is larger, and worth about 1½ ton silver-lead ore per fathom. There is no particular change in the stopes or tribute pitches. A full report on all places will be sent you next week. All work is being pushed on as fast as possible. The 45 tons of silver-lead ore sold on the 14th inst. realised 534l. 10s.

**SOUTH DEVON UNITED.**—W. Hooper, Feb. 14: The lode in Martin's shaft continues of a most promising nature, being 5 to 6 ft. wide, and worth fully 25l. per fathom, with every indication of further improving; the ground continues very favourable for sinking, and good progress is being made. By the end of another week we hope to be down the required depth for another level, when we shall commence without delay to drive east and west on the course of the lode, and from present indications no doubt valuable ground will be laid open. The lode in the adit level, west of the old pump shaft, is of much the same character as for some time past, yielding beautiful goosin, fluor-spar, with stones of good quality copper ore. We are also pleased to inform you we have set three tribute pitches. One pitch in the back of the 76, west of Brook engine-shaft, to two men, for two months, at 13s. 4d. in 1l. One pitch in the back of the 80, east of Brook engine-shaft, to three men, for two months, at 13s. 4d. in 1l. One pitch in the back of the 90, east of Brook engine-shaft, to three men, for two months, at 13s. 4d. in 1l.

**SOUTH FRANCES.**—O. Craze, Feb. 12: There is no change in the value of the lode in Frances's shaft; lode worth 35l. per fathom for 12 ft. long. The same remark as to change will apply to the two bottom levels; in fact, since our last report a pair of red plates broke near the adit at Marriott's, and several pins, &c., in the 101 fm. level, which have been the means of throwing in a little water in the bottom of the mine and prevented our doing much there; however, we are all right again now, and hope to be in for again some time to-morrow. The 226 west is being driven by boring-machine, the lode in which for the last 6 ft. driven has improved in appearance and value, now worth 15l. per fathom, and looks kindly to further improve. A winze in the bottom of this level is going down in a masterly way, which is worth 35l. per fathom for 12 ft. long. No. 1 stop in the back of this level is worth 24l. per fathom. No. 2 stop is worth 14l. per fathom. No. 3 stop is worth 22l. per fathom, and No. 4 stop is worth 12l. per fathom. A winze sinking below the 226 east is worth 24l. per fathom for 12 ft. long. In the cross-cut at the 255 east we are nearing the lode, and in a week more expect to be fully into it when we shall know its value. We have today broken some stones from the forebreak which contain about 20 lbs. of tin to the ton of stuff, which we consider a good indication. This end is being driven by boring machines. We are rising in the back of the 205 fm. level by boring machine on a lode worth 18l. per fathom for length of rise, 12 ft. A stop in the back of the 185 east is worth 14l. per fathom, and a stop in the bottom of this level is worth 14l. per fathom. No. 1 stop in the back of the 185 west is worth 15l. per fathom, and No. 2 stop is worth 14l. per fathom. Marriott's Shaft: The men are cutting down the shaft with fair speed. In Daubuz's shaft we are driving the 58 north towards the lode, with good speed, and hope to cut it again, and should we find it good speed, we shall be able to open out a good mine in that part of the property speedily. Since we hole Marriott's shaft from the 185 to the 205 we have had our compressor put in thorough repair, and we are now driving three boring machines with it, whereas there were never more than two driven with it before. This is very important for the future opening out of the mine.

**SOUTH KITTY (St. Agnes).** Feb. 14: The sinking of the new shaft is still being continued, and rich tinstone is being found. We fully expect as we go down the lode will improve in size and value. The prospects on the New Kitty lode are still cheering. Additional men will be put on to open up this part of the mine, where we expect a junction of two lodes, and it is generally believed that a rich course of tin will be met with. We shall soon arrive at the conclusion where to sink the engine-shaft.

**SOUTH PENSTRUTHAL.**—S. Davey, Feb. 14: Engine-Shaft: In the 14 fm. level cross-cut south we have struck the capel of the lode, which will be got through as quickly as possible to ascertain size, character, and value, which I will forward by telegram as soon as it is accomplished. There is no special change to note in the floor-roof shaft sinking below the 150. The lode in the 150 end west is producing good stones of yellow copper, with occasional stones of tin.

**TANKERVILLE GREAT CONSOLS.**—Arthur Waters and Son, Feb. 14: Bog Mine: The 21 pitches at work here by 65 men are together worth 6½ tons of ore (at tribute varying from 50s. to 80s. per ton) and 8 tons of blende per fathom

(at a tribute varying from 25s. to 30s. per ton). We have to-day sold 30 tons of lead ore for 2032l. 5s. and 40 tons of blende for 1611l. 10s. Pennerley Mine: Warm Water Lode: The rise and stop in the 120 west are each worth 20 cwt. per fm. The new shaft is down 4 fms. 2 ft. below the 23; lode at present worth 2 tons per fathom. The lode in the winze in the 93 west is 17 ft. wide, and worth 3 tons per fathom. The two stopes in back of the 93 west are together worth 4 tons per fathom. The winze in the 86, east of new shaft, is in a very wide lode, worth about 1½ ton of lead ore per fathom. The stopes in back of said level is worth 20 cwt. per fathom. Potter's Pit: In consequence of the very wet weather we have had, late the water here has risen to the 105.—Tankerville: Main Lode: In the 244 east we have during the last few days been driving through a narrow part of the lode, and yesterday cut into a small cavity, which has let down the water from the winze in the 232. The lode in said bottom end east is 2 ft. wide, producing good ore stuff. The 244 west is in a lode 4 ft. wide, composed of carbonate of lime and quartz, worth 20 cwt. of lead ore per fathom. The winze (referred to above) in the 232 east is down 3½ fathoms; lode at present 4 ft. wide, worth 1½ ton per fathom. The lode in the 232 east is 5 ft. wide, worth 1½ ton per fathom. The two stopes in bottom of the 220 east are together worth 3½ tons per fathom. The pitch in the 220 west is worth 1½ ton per fathom.—North Lode: The stopes in back of the 220 east is worth 1½ ton per fathom. The two pitches in bottom of the 182 west are together worth 2 tons of lead ore and 1½ ton of blende per fathom.

**TREGON TREES AND OLD POLGOUTH UNITED.**—Silas Pascoe, Feb. 11: The north lode at Mulva is looking well, especially so in the bottom of the level. We should very much like to start a new shaft upon this part of the set. The level every indication of this being very valuable as depth is attained.

**TREVAUNANCE UNITED.**—Wm. Vivian, Feb. 14: The cross-cut driving south of middle shaft, at the 55, has intersected the north wall of the lode. I hope to cut through the lode in a few days, when I will report fully on it. We shall have about 6 tons of tin to sell before the meeting of shareholders due in March.

**TREBARTHA LEMARNE.**—Wm. Skewis, Feb. 14: The lode in the 10 fathom level, west of Kemphorne's shaft, and in the guiley is of about the same size and value as when last reported on. The dressing department is progressing favourably.

**WEARDALE.**—James Blekiron, Feb. 9: Killhope: The Trent level west continues extremely hard, and consequently only slow progress is made. We expect to get into easier ground shortly. The silts are rising. The coal sill drift, or stopes, east has improved a little; ore to save. The Firestone level in plate above the Firestone vein appears to have hitched to the south. Two stopes in flat Killhope Head, Millburn's low, and Dalton's high flats have both improved for ore; worth 2 tons per fathom each. There is no change to note in any other part of Killhope Head vein. Nine sets of working ore tribute in ground worth from 16 to 40 cwt. of ore per fathom.—Old Moss Winze: The east level end is looking more kindly still in plate, but vein showing more mineral matrix, and yielding ore to save. Stopes over said level—east from cross-cut worth 3 tons of ore per fathom. West in Old Moss, Elliott's house now all cleared out, an 14 men commenced to drive main level or end west, at 35s. per fathom. Elliott's stopes worth 2 tons of ore per fathom. Five sets of tributaries at work in Old Moss. In the new whimsey the men have cut through the central part of ground, and will now make in rapid progress in blasting the outside and roof; there is no other change in this mine.—Burtree Pasture: In Millburn's, or 75 fm. level, there is no change to report. We have 10 sets of men stoping on tribute above the said level in Nat. Grass Gill have 4 fms. limestone, in ground worth from 20 to 30 cwt. per fathom. Donaldson's, or 103 fm. level, east in Weststone sill, the vein is 5 ft. wide, composed of fluor-spar and quartz, and extremely hard; part of the vein is still off to the north; at 104, per fathom, and worth 15 cwt. of ore per fathom. One set of tributaries above said level worth 30 cwt. of ore per fathom.

**Green Lows:** In Jackson's drift the top level is suspended on account of an intersection by a cross vein, which has thrown beds or sill down on the west side about 4 fathoms. We have set men to drive in the south vein, which we think has not been fairly tried or proved. There is no change in Watson's drift in west middle level; the air is very bad. We have set four men to push forward the air-course, and to reach the level of the drift. The men working the men have cut through the central part of ground, and will now make in rapid progress in blasting the outside and roof; there is no other change in this mine.—Burtree Pasture: In Millburn's, or 75 fm. level, there is no change to report. We have 10 sets of men stoping on tribute above the said level in Nat. Grass Gill have 4 fms. limestone, in ground worth from 20 to 30 cwt. per fathom. Donaldson's, or 103 fm. level, east in Weststone sill, the vein is 5 ft. wide, composed of fluor-spar and quartz, and extremely hard; part of the vein is still off to the north; at 104, per fathom, and worth 15 cwt. of ore per fathom. One set of tributaries above said level worth 30 cwt. of ore per fathom.

**WEST CARADON.**—N. Richards, Feb. 13: It looks from the dialling just completed as if the ore part of Jope's lode at the 17 is starting north and driving a crossing about 16 fms. west of main cross-course. We have commenced cross-cutting in that direction to prove it, and we calculate we shall have 3 or 4 fms. to drive to reach the same, but the ground is hard, and at present the air is bad, as that I fear we shall not be able to put more than one pair of men to drive. Gilpin's lode in the adit level is about the same as when last reported on; the rise and stopes yielding together 3½ tons of copper ore per fathom.

**WEST CREEK.**—J. Andrews, Feb. 13: In cutting plate also ground for tributaries and cistern in the 110, we have met with a hard bar of capel, in consequence of which we shall not be in a position to begin to fix the 8 in. lift before Monday or Tuesday next. The lode in the 80 west is 2½ ft. wide, composed principally of quartz, capel, and mundle, with spots of copper ore.

**WEST KITTY.**—Wm. Vivian, Feb. 14: In the 80, driving east, the lode is worth 3l. per fathom. In the 72, driving east, the lode is worth 20l. per fathom. In the 60, driving east of the rise, the lode worth 15l. per fathom. In the 50, driving east of the rise, the lode is worth 50l. per fathom. In the 60, driving west of cross-cut, the lode is worth 20l. per fathom. In the 50, driving east of the rise, the lode continues to improve, and is worth 12l. per fathom. In the stopes in the bottom of the 60, west of cross-course, the lode is worth 25l. per fathom for copper. No change to notice in the tin stopes since last report.

**WEST HOLWAY.**—W. T. Harris, Feb. 14: In course of progress in the 110 west a cavity in the lode has been discovered, in the extreme end of which lead is visible, and prospects are very encouraging. Shall report further on this in my next. The cross-cut north at the 60 yields stones of lead, and ground favourable for progress. No other change to report.

**WEST LISBURN.**—W. Northey, Feb. 14: A few days ago I dialled the cross-cut at the 14 fm. level, and find that we are on the eve of cutting the new lode providing it runs parallel with the main lode. The strata is congenial for the production of lead ore, and we are often meeting with good joints letting out water highly coloured with oxide of iron. The machinery is in good order, and the pumping-works kept going regularly.

**WEST PATRICK'S BRIDGE.**—D. Williams, Feb. 13: I am pleased to say that the engine and boiler combined have been removed from West Patrick to East Grassington, and fixed upon the masonry foundation previously prepared. The drains are also removed, and, weather permitting, I hope shortly to be able to inform you that the engine house and pass-head gear are also erected. We have sold a small parcel of pig-lead, and have a small lot of ore on hand, which will be smelted together with the next lot. The tributaries are at present assisting us in removing and fixing the machinery in East Grassington.

**WEST PATRICK'S BRIDGE.**—J. Woolcock, Feb. 14: Men are making good progress in clearing out the old mine, and as far as we have gone we find the lode going south, composed of clay, spar, and a little lead ore, but it is impossible to work on the lode until we get the levels cleared out and retimbered where they are broken down. Under these adverse circumstances we are getting on as fast as the nature of things permits.

**WEST WHEAL FEGOR.**—W. T. White, John Angove, Feb. 13: Owing to the continued delay in mining and in the price of tin we have deemed it advisable to confine our underground operations to the working of the more important points in the mine—to drive the 80 west on middle lode, by four men, and the following bargains west of cross-course:—The 60 west on main lode, by four men; the 60 west on new lode, by two men; the 45 west on main lode, by four men; and the 36 cross-cut south to cut Wheal Diamond lode, by four men. Judging from general appearances, we strongly recommend these levels being driven, as we have 300 fms. of unexplored ground in that direction, and the chances of making valuable discoveries are exceedingly good. By adopting this course our working costs are considerably reduced, and with a little improvement we might soon be able to pay costs.

**WHEAL AGAR.**—W. C. Trevena, Feb. 11: I beg to hand you our setting report of Saturday: Weston's engine shaftmen are employed in casing and dividing the shaft between the 225 and 235 fm. levels. The 225 is being driven east of shaft by six men, at 9l. per fathom, in a lode worth for tin 30l. per fm. This end is now close on the cross-course, and letting down a large quantity of water, which is causing the level above. A rise above the 225 is set to six men, at 6l. per fathom, where the lode is worth for tin 25l. per fathom. The 215, east of shaft is suspended for a while, and the men put to stop in the back at 7s. 6d. per ton of stuff, in a lode worth for tin 20l. per fathom. No. 1 stop in the bottom of the 215, east of cross-cut, is stopping by six men, at 7s. per ton, and worth for tin 15l. per fathom. No. 2 stopes, west of No. 1 winze, is stopping by nine men, at 6s. 9d. per ton, and worth for tin 20l. per fathom. No. 3 stopes, east and west of No. 2 winze, is stopping by 12 men, at 6s. 6d. per ton, and worth for tin 20l. per fathom. No. 4 stopes, east and west of the 2 s winze, is stopping by 12 men, at 7s. per ton, and the lode is worth for tin 25l. per fathom. The 195, east of shaft, is driving by nine men and a machine, at 15l. per fathom, where the lode is worth for tin 20l. per fathom. A stopes working in the bottom of this level by nine men, east and west of winze, at 7s. per ton, where the lode is worth for tin 15l. per fathom. The winze sinking below the 185, east of shaft, is unproductive, and sinking by six men, at 15l. per fathom. In the 185, driving west of cross-cut, the lode is worth for tin 5l. per fathom, and driving by two men, at 5l. per fathom. A stopes working in the back of this level by four men, is worth for tin 5l. per fathom, and stopping at 30s. per fathom. The new shaft to sink below the 120 by nine men, at 15l. per fathom. Our machinery throughout the mine is in good condition and working well.

**WHEAL BENNY.**—Thomas Cocking, Feb. 12: The lode in the ends and stopes, east of shaft continues to yield a fair quantity of tin of superior quality. We have a great many tons of stuff stamped already for dressing, which will be got on with immediately our buddies are in order, which I hope will be completed and working by the end of another week.

**WHEAL CREBOR.**—H. Phillips, P. D. Holman, Feb. 12: The lode in the 144, east of shaft, is 3 ft. wide, containing good stones of copper ore and an eniel mundle. We have communicated the 144, west of shaft, with the 144 driving east of western winze. We shall at once commence to stop the back, the lode

will yield fully 11 tons of ore and mundle per fathom. We shall put the men that were driving east to take down the lode standing in the north side, east of winze, the lode will yield 16 tons of ore and mundle per fathom. The lode in the winze sinking below the 132, east of No. 2 winze, will yield 7 tons of ore per fathom. The lode in the 132 driving east of winze will yield 2 tons of ore and mundle per fathom. The stopes in back of this level will yield 10 tons of ore and 2 tons of mundle per fathom. The part of the lode carried in the bottom of the 120, east of shaft, will yield 12 tons of ore per fathom. We have cut into the lode at the 72 over 6 ft., but have not reached the footwall; the part cut through is composed of spar, capel, intermixed with mundle. We are still driving by the side of the lode at the 48. The lode in the stopes in the back of the 48, east of shaft, will yield 4 tons of ore and 4 tons of mundle per fathom.

**WHEAL LUSKY.**—W. Skewis, Feb. 14: The lode in the adit, west of cross-cut, is if anything a little larger and richer for copper ore.

## Original Correspondence.

### CORNISH MINING—OLD SHEPHERDS.

SIR,—Reporting on this property some time since, I made allusion to the great extent of unwrought ground within its limits, and mentioned the desirability of working the western and north portions by other companies or additional capital. The latter section is a portion of the once celebrated Wheal Rose, where they smelted their own lead and silver, from which the late Sir Christopher Hawkins profited 80,000l., the whole of which was raised from the surface to the depth of 60 fms. only, which is about the depth of the adit or day level in the most famous mining districts of the county. In his pursuit of the hidden chambers of wealth the miner is led on through those shallow deposits to deeper developments; but in this case all hope of that success which now awaits the present company was cut off by the famous Chancery suit of the Bishop of Exeter and Sir Christopher Hawkins, and it has been in abeyance to the present; this bunch of 'mineral compares favourably with the shallow deposits of the various other districts of Cornwall, which led to greater wealth on extended operations. A few analogous comparisons may not be out of place to refer to:—Wheal Basset on 2624l. profited 320,144l., or 11,823 per cent.; Carn Brea profited 277,500l. on 15,000l. capital, or 1850 per cent.; North Roskear, 110,000l. on 700l. capital; Tresavean, 454,422l. on 3120l. outlay; Wheal Baller, 244,672l. profit on 1280l. outlay; North Basset, 85,300l. on no paid-up capital; West Basset, 200,000l. on 9000l. capital; United Mines, 482,800l. on 16,000l. capital; South Frances, 205,000l. on a capital of 9393l.; and at least a hundred other equally startling examples can be enumerated, all of which made mineral shallow and under same conditions as that presented at Old Shepherds.

The interest and profits of mining, continues Mr. Bawden, are not limited simply to dividends from products, but afford frequent and unexampled instances of greatly accumulated gains from rapid advances in market value of shares. Something of this kind may be set in with regard to Old Shepherds, seeing the shares are rapidly rising in market value, stimulated, likely, by the re-working of the north and western portions of the set, combined with the near approach to the bottom of the south mine, where rich bunches of silver-lead are known to exist. I can remember, from long association with mining pursuits, a Devon Great Consols share, with 1l. paid selling for 800l. per 1024th share, and that within one year of its commencement; a Basset, 5l. paid, 800l. per share; a Buller, 5l. paid, 1000l. each; Tresavean, 31l. 10s. paid, 2700l. each; East Wheal Rose (close to Old Shepherds, showing same lodes), with 50l. paid, selling for 1750l. each; and analogy points to like results on the development of both the north and western sections of this mine. I therefore take it that Old Shepherds shares may be called cheap—proof of which is the enquiry for them by county people who understand this business, and have a general knowledge of the value of the property; but, whatever may be the result of the market value of the shares, no one can predict with certainty as to its expansion of yield and profits in the coming decade. CHARLES BAWDEN St. Day, Scorrer, Feb. 13.

**ANTHROPOLOGY.**—Mr. Sydney B. J. Skerthly delivered his third lecture on Primitive Man, on Feb. 5, his subject being the Men of the River Drifts. It was quite impossible to understand the antiquity of man without a knowledge of the physiology of rivers. A river has a life, an anatomy, and physiology of a peculiar and interesting kind. As regards its direction we find the river deflected wherever a tributary enters, and the tributaries enter at greater and greater angles as they approach the mouth of the main stream. Then as to its motion—a river is a machine for producing uniform motion, and its bed is not an inclined plane, but a very subtle curve, which approaches a cycloid, and is of such a nature that uniform motion is very nearly attained. The Rhine steamers do not use more coal high up than low down the channel, showing the velocities are equal. A cross section of a river valley shows the sides to have a double curve, convex above, concave below. The reason is that the upper convex parts are the result of atmospheric denudation, and only the lower parts are due to river action. Where atmospheric action is wanting, as in rainless districts in America and Africa, the river merely saws a narrow chasm or canyon in the course of ages. The valleys of all rivers are larger than the present streams require, and the valley deposits are more massive and at higher levels than the present rivers could form. All these facts point to a difference of condition; to a time when the rivers were larger, and thus and by the fossil remains proclaim an immense antiquity, and a long era of bountiful rain. In these deposits the remains of man occur, and the peculiar distribution of the implement-bearing beds led the lecturer to ascribe all paleozoic remains to the glacial epoch.

The fourth lecture, on Tuesday, was on the People of the Caves. Caves, of course, are limited in their distribution by the rocks, chiefly limestones, in which they can alone be formed. In these cases the remains of man occur with the bones of extinct animals. We get not merely the stone tools such as occur in river drifts, but smaller weapons such as barbed harpoons, bone needles, ochre for painting the body, pyrites for obtaining fire, and so forth. They show us that the cave-men belonged to the savage hunting and fishing stage, and had neither domesticated animals nor cultivated plants. They were expert fishers and fowlers, and certainly were clothed in skins as the presence of needles, and a drawing of a glove on a piece of bone show. They seem to have had no care for their dead, for no authentic trace of burial is known. A few bones only are of certainty to be ascribed to these people, but we really are not yet in a position to determine their physical characters. Perhaps the most interesting fact about them is their art culture. Upon bone and stone, with no better tools than flint, they depicted hunting scenes and animals with a freedom, grace, and spirit, which the lecturer believes was lost to the world afterwards until Greek times. In two cases man is shown, and in both he is naked. In one a peculiar stoop gives a very ape-like aspect. The play of the muscles is well given, and in one case a real landscape, representing a reindeer grazing amid herbage, has the animal drawn almost like a Landseer. Their earliest traces of art were compared with modern Eskimo art, to the triumph of the former.

**THE STEAM-ENGINE MAKERS' SOCIETY.**—The earliest of the annual reports issued by the Trades Union societies connected with the engineering branches of industry is that of the Steam-Engine Makers' Society, and in preciseness of information, with the broad and comprehensive treatment of trade matters generally to be found in the address sent out to the members by the present secretary (Mr. Swift), the report bears very favourable comparison with those issued some years back by the above society. This week the 59th annual report has been sent out to the members, and notwithstanding the fluctuations in trade during the past year the secretary is able to report a successful working of the association. The fact, however, is not disguised that the results have not been so beneficial as the executive council anticipated or expected 12 months ago; but when they consider the rapid decline of trade that set in at the latter part of the year and the strain that was put upon their funds, it was matter for congratulation that they had a fair balance to the society's credit after all legal claims had been met. The present position of the society was all the more satisfactory when they considered the four years of seriously depressed trade, from 1877 to 1881, which



aborted all their income, a great portion of their capital, and extra contributions in addition. Since 1881, however, it had been their duty to submit annually an improved cash account, and for 1883 they would safely say that, all things considered, their financial records were satisfactory.

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### The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, FEB. 15, 1884.

IRON.	£ s. d.	£ s. d.	TIN.	£ s. d.	£ s. d.
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\* At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; 1X 6s. per box more than 10 quoted above, and add 6s. for each X. Terne-plates 2s. per box below tin-plates of similar brands.

**REMARKS.**—This week there has been more steadiness in our markets, and taking them all round there has not been so much cause for dissatisfaction. It is true there are still very many features which require to be removed before a general recovery ensues, but at the same time here and there symptoms of a hardening tendency have made themselves visible. The disposition to follow up any little rise that may have arisen has not been very great, nevertheless the slightest signs of an improvement at a time like the present, when trade is so very dull and monotonous, are more than usually appreciated. Out of many other features which are viewed at the present time with anxiety is the question of finance. Lately the value of money has been stiffening, and last week a rise was effected in the Bank rate; but notwithstanding this money may still be reported cheap, and it is fortunate that it is so, for up to the present it has had little effect in crippling or injuring business. The anxiety, however, that exists as regards the future. Here we do not intend to fathom the probabilities of an advance in money, nor will we express any opinion as to the chances of a further rise in the value of money or not, but merely see what effect an advance would have upon the metal market. In the first place it would have the same influence upon metals as on general trade, that of checking enterprise. Fresh and important schemes would not, and perhaps could not, be entered upon, because they invariably require more or less financial assistance; thus a check would be placed upon any extra demand or new outlet for metals. This in itself would be a matter of regret, especially with the large and constantly-growing increase in the production of almost all metals, but then arises the problem as to whether this would be the full extent of the evil, or would the unfavourable influence extend to the ordinary demand—that is, the regular demand which the trade has been accustomed to. In all probability it would. Such a vast amount of the business both for consumption and shipment can only be transacted with financial aid, that it is not requisite to look far into the matter to see that dearer money would rapidly make a deep impression upon the trade.

It would vastly tend to restrict business, to reduce the already low limits of buyers, and most likely cause prices to recede, for not only would there be greater competition for such orders as might be offering upon the market; but also the extra rates of discount to be paid in order to secure the successful finance, for the execution of the orders would in reality, though perhaps, not apparently, have to be met by sellers making greater concessions in price. So far, therefore, we have seen that the probable effect of dearer money would be upon the regular trade, it will doubtless be interesting while treating with the subject to discover its likely influence upon speculative business. At times when genuine trade is depressed the markets are kept lively and animated by the action of operators, and thus intense depression is sometimes warded off; but dear money would doubtless have the same influence upon speculative as upon ordinary business. Higher rates would have to be paid to effect loans, which would induce many holders to press sales, and particularly so if prices were to recede, as under such circumstances they doubtless would, for the margins would have to be kept up and extra capital provided. It is, therefore, to be hoped in the interests of the trade that money will not further advance in value. At the present rate there is nothing in it to interfere with the full development of trade, but any further rise might lead to difficulties which would probably create a serious shock to the markets in their present sensitive condition.

**COPPER.**—As regards prices there has been a rather better market for copper than during the past week, but the actual amount of business doing has not materially increased. The manufactured trade is in a very satisfactory condition, and notwithstanding the easiness of prices the demand is in no way stimulated. This is one of the most adverse features in the market, and while smelters are rapidly working off old contracts fresh orders do not come forward, and the prospects of the trade are thereby somewhat dulled. With regard to the hardening tendency of Chili bars, the firmness has arisen from combined extra strength on the part of holders, and not from any augmentation in the amount of business transacted. It is a remarkable fact that generally just before the announcement of the Chili bar value of Chilean produce becomes enhanced. It is clear that this does not arise from any extra amount of business doing just at that particular time of the month, and, therefore, to other causes the little improvement which usually takes place is to be attributed. It is, doubtless, occasioned by the efforts of holders who possess such a vast interest in the maintenance of the market. By slightly pushing up prices they give the market a start, so that in the event of the bar value being announced as light the upward movement having once begun becomes easier to maintain, and thus still higher rates are more easily realised.

On the other hand, if heavy charters are advised, the little rise that is effected

just before their announcement is, perhaps, then, all that is lost; but, on the other hand, if no advance had been made, and heavy charters were telegraphed, it would amount to necessity intimidate weak holders into pressing sales, or at least still greater reduced prices would have to be accepted. To this cause, perhaps, more than any other, is the stiffening tendency of the last few days to be attributed, and no importance is likely to be attracted to it until it becomes more thoroughly pronounced. It scarcely seems, however, that the improvement is to be more thoroughly pronounced, for to-day a marked change for the worse has taken place; the market has been very gloomy, and the rise effected during the last few days has been entirely lost, and this notwithstanding that deliveries during the first half of the month have been very satisfactory, amounting to about 4000 tons. Confidence has been suddenly shaken, and at the close the appearance of the market is most discouraging, and decidedly points to reduced prices.

**IRON.**—The state of this trade remains very unsatisfactory, and no symptoms of improvement are as yet visible. Business is restricted in all its branches, and prices are kept low through a variety of causes. There are no fresh features of any importance to record, but those which have for a long time weighed heavily on the market seem to deaden the weight and increase the burden as time progresses. There is an utter want of confidence existing, and cheerfulness is noted only for its entire absence. We do at times read of an extensive business being transacted in Scotch pigs in Glasgow; but accompanying this the market is invariably reported flat, and generally prices are quoted lower, signifying very plainly that large and numerous as the transactions may be they are mere sales pressed upon the market; it may be in some instances by makers themselves, who, in order to keep their mills going and their forges in blast, are compelled to effect contracts, or it may be by holders wearied out by long and patient waiting at last determine to sell and cut their loss rather than run any further risk of a most uncertain future. The latter reason is, perhaps, the most probable and correct one, to which the constant reports of extensive business are to be attributed, but be that as it may, it is certain they do not arise from any extra amount of disposition to make purchases either for *bona fide* wants or speculative requirements. Recent "bear" sales may have to be covered in, but this does not cause more than the most temporary favourable influence, because there are numerous sellers only too anxious to satisfy the wants of such operators, and to secure any other orders that may be offering upon the market. The competition among sellers is, indeed, keen, and in consequence prices recede. Buyers apparently have it all their own way, and yet so bad is the general state of trade that few of them are ready and willing to satisfy more than their most pressing wants, a feature which in its turn has the effect of still further stimulating weak holders to press whatever they may have in the market.

At the opening of the Glasgow warrant market last Monday the tone was rather firmer, and transactions were reported between 42s. 7½d. and 42s. 9½d.; but on Tuesday the market was once more flat, and the price gave way to 42s. 6d. A slight change for the better, however, was perceptible on Wednesday, when a fair business was done between 42s. 7d. and 42s. 8d. Yesterday, again the market was steady, and a moderate business was done between 42s. 9½d. and 42s. 10½d., and the closing figure this afternoon is 42s. 6d. The shipments last week were again small, and amounted to only 8900 tons, against 12,530 tons for the same week of last year, being a decrease of 3630 tons, and which makes the total shipments for the whole of this year 55,733 tons, against 63,834 tons for the same time of last year, and 57,695 tons for the similar period of 1882. The two furnaces which were damped down last week have again been put into blast, and the total once more stands at 97, while the public stock has been further increased by 932 tons, and now equals 592,338 tons, against 591,356 tons a week ago. The imports of Middlesbrough pig iron into Grangemouth last week were 8600 tons, against 1920 tons for the same week of last year, being an increase of 6680 tons, and which makes a total increase for the whole of this year compared with last of 5039 tons. Business at Middlesbrough continues very restricted, the quantity that is changing hands being most limited. Makers' quotation for No. 3 is 27s. for prompt delivery, and 6d. more for forward delivery but they are being undersold by merchants, who quote 36s. 9d. for delivery in the course of next month. The price of No. 4 forge is 34s. 6d. to 35s., and warrants are wholly neglected.

The public stock has been reduced by 200 tons, and amounts to 62,144 tons while the shipments last week were about 17,350 tons. The demand for manufactured goods slack, and orders are being held in abeyance. The price of ship-plates is 5½s. 6d.; angles, 4½s. 6d. to 4½s. 7½d.; and of bars, 5½s. 6d. per ton. The Wolverhampton market is not in a very healthy condition, and there is a good deal of competition amongst sellers, particularly for specifications of sheets. Prices, however, have not undergone much change, and the price of doubles is 8½s. to 8½s. 6d., and 9½s. to 9½s. 6d. for treble, being quoted at 5½s. 6d. to 5½s. 6d.; gas strips, 6½s. 6d. to 6½s. 6d.; and certain Derbyshire pigs 46s. 3d. per ton. The Birmingham market keeps very unimpaired, and there are but few enquiries for any class of iron, sellers keenly feeling the competition of Cleveland makers. For stamping sheets, however, there is a rather better demand, but in pigs there is next to nothing being transacted, and sellers have the greatest difficulty in upholding prices.

**TIN.**—During the past week the market for tin has been fairly strong, and at times slightly more disposition has been evinced to make purchases, nevertheless operators are still rather shy to follow up any rise, and consequently the market is not for long sustained. Little spurts every now and again occur to give animation to the market, and implant more strength to the tone, to make the tone more cheerful, and for the time being to establish more confidence as regards the future. Beyond this little better feeling, which has existed more or less throughout the whole week, but which was chiefly noticeable on Tuesday last, there is nothing fresh to record. It may be that this little extra spirit of vitality is the forerunner of better times and higher prices, but there is no fresh substantial feature to strengthen the views of the sanguine or to show that the minimum of the market has been touched. The market, as far as can be seen, is in exactly the same position as it was at the early part of last week, when the tone was so dull and gloomy, and, therefore, whilst the little extra amount of buying, and the slightly advanced prices of the past day or two have been most appreciable, yet at the same time there is nothing new whereby any anticipations can be formed of an established improvement in the immediate future. The market, as we have often shown, is just as likely to go on as the other. The tone of the market of both "bull" and "bear" interest existing, and, therefore, from speculative influences prices may tend either in one direction or the other, whichever party proves themselves to possess most strength; and as regards legitimate influences, supply and demand keep much about on a parity, and are, therefore, just now unlikely to materially influence the market in either direction.

**SPELTER** remains dull at 14½s. 10s. to 14½s. 15s. for ordinaries, and 15½s. for specials.

**LEAD.**—Business has been done in Spanish at 11½s. 11s. 3d. and 11½s. 12s. 6d., the latter remaining the price, while English is quoted at 12½s. per ton.

**STEEL.**—The market is depressed, the demand inactive, and prices are easy.

**TIN-PLATES.**—There is very little doing, and prices all round remain steady.

**QUICKSILVER** has been in good demand all the week, and closes very firm at 5½s. 2s. 6d.

The settlement of the usual fortnightly account commenced on Tuesday, and has occupied the chief attention of the dealers in the MINING SHARE



son's shaft preparations are being made to drive east and west on the course of the lode, where it is expected some profitable ground will be laid open as the levels are extended.

Devon Great United,  $\frac{1}{2}$  to  $\frac{3}{4}$ ; the lode in the 104 level, west of Willesford's shaft, is from 3 to 4 ft. wide, and yielding 4 tons of copper and mundaic ores per fathom. There is no important change in other parts of the mine.

Drakewalls,  $\frac{1}{2}$  to  $\frac{3}{4}$ ; good progress is being made at the various points of operation, the levels and winzes being well pushed forward. It is expected that the rise in the back of the 90, west of engine-shaft, will be completed in about a month.

Ecton,  $\frac{1}{2}$  to  $\frac{3}{4}$ ; and reported to be firmer upon the rapid progress making in draining the Clayton Mine, and the very satisfactory indications that have been met with in all parts of it that have, so far, been unwatered. The manager reports that the pumping is going on steadily, without any hindrance or difficulty, and the amount of water is found to be very moderate. It is considered highly probable that in a few days the mine will be drained to the 30 fm. level, at which point it is intended to set a large force of men to work. Good results continue to attend the various exploratory operations in the shallow levels; during the past week the Ider Alley cross-course has been cut into, containing both copper and lead, and from its dip and bearing the manager thinks that it will soon form a junction with the famous Ecton vein, which at that point would be of great width, the main lode or vein probably measuring 25 to 30 ft. from wall to wall. It was from junctions of the main lode with cross-courses such as this that the immense returns made by Ecton were obtained, and great interest is consequently attached to the present discovery.

Kit Hill,  $\frac{1}{2}$  to  $\frac{3}{4}$ ; in the Tunnel level the distance driven during the past week was about 10 ft., the ground not being favourable for progress. The 88 east and west present a very promising appearance, the lode being 4 to 5 ft. wide, and yielding tin ore.

South Devon,  $\frac{1}{2}$  to  $\frac{3}{4}$ ; the manager in his report states that during the past week the lode in Martin's shaft has improved to 25 ft. per fathom, with every indication of further improvement. It is expected that in about a week's time another level will be opened, and driving will be commenced both east and west on the course of the lode, and where it is expected good ground will be laid open.

South Frances,  $\frac{1}{2}$  to  $\frac{3}{4}$ ; the lode in Pascoe's shaft is for 12 ft. long worth 35 ft. per fathom. The four stopes in the back of the 226 west are worth together 72 ft. per fathom. Good progress is being made in Daubuz shaft, and the three boring machines are working well.

California Gold,  $\frac{1}{2}$  to  $\frac{3}{4}$ ; the mill run this week was 496 tons; yield, 1200 ft.; smelting ore sales, 200 ft.; total, 1400 ft. The weekly report states that the 1600 level west is in a fine run of ore 6 ft. wide, the yield being fully 15 tons per fathom; and that the mill returns from this point are of an average of over 12 dwts. per ton. Operations are in progress for sinking the shaft to 1600 ft.

Kohinoor and Donaldson,  $\frac{1}{2}$  to  $\frac{3}{4}$ ; the directors received the following telegram from the manager at the mines on the 9th inst.:—"Mill cannot be supplied before 15th. Tramway automatic action must be assisted. Am fixing gear."

Colorado United,  $\frac{1}{2}$  to  $\frac{3}{4}$ ; from the advices published this week it appears that the 13th level has now been driven 600 fathoms east of the shaft and that the lode at this point is 5 ft. wide, the ore being composed entirely of galena, with a little grey copper scattered through it, this being the class of ore most productive for silver in this mine. The ore body has now been fully proved by this drift of 600 fathoms. In the silver ore tunnel they are also in good ore, and driving on the Brown they have come into ore, and the workings on the Coin lode are also producing a fair quantity of mineral; so much so that the sales were 10 tons of cobbed ore, average value in Colorado \$250, notwithstanding the fact that the mill had been idle in consequence of the weather, but had just been started again; the milling ore on hand being 300 tons, which will produce from 40 to 50 tons of marketable ore of the value of from \$100 to \$150.

Ruby and Dunderberg,  $\frac{1}{2}$  to  $\frac{3}{4}$ ; the usual report this week is very short, owing to the Home Ticket Mine being closed on account of a dispute with the miners, which, however, only lasted for a short time, as work was commenced again about Jan. 30 on the new terms offered by the company. Since then shipments of ore have been much interfered with owing to deep snow, which has rendered the roads almost impassable. The usual work was going on at the Dunderberg and Lord Byron Mines.

In Lead Mine Shares there has been somewhat more doing, in consequence, probably, of the greater firmness of lead. The future of lead mines is considered to be favourable, inasmuch as during the long depression economy has been introduced wherever practicable, so that the shareholders will have the full benefit of any rise in the price of pigs. Vans are quoted 3 to 3 $\frac{1}{2}$ ; the directors in their report, prepared for presentation at the meeting on Thursday next, regret their inability to declare a dividend. They explain that this result is altogether attributable to the continued fall in the price of lead and blende, which has had a disastrous effect on the finances of the company, the average price for the year having been for lead 7s. 3 $\frac{1}{2}$ d., against 10l. 13s. 5 $\frac{1}{2}$ d. in 1882; and for blende 21s. 11 $\frac{1}{2}$ d., against 21s. 8 $\frac{1}{2}$ d. in 1882. The directors trust that prices have now reached their lowest figure, the December sale realising only 8l. 3s. 3d. per ton, and the January sale, 1884, 8l. 3s. 10d. per ton. It will be seen from the balance-sheet that the loss for the year amounts to 534l. 16s. 11d. This is not really a loss on the workings, as it includes the settlement of an old rental account, as well as the purchase and erection of the rock-drilling machinery, which for want of capital has been debited to revenue; together these items more than cover the amount mentioned. It will be in the recollection of the shareholders that for some time past the western part of the mine at the bottom level has shown strong indications of developing a considerable course of ore. The favourable features are so marked that the manager recommends a speedy and special work for opening up this ground. He calculates that it will need a sum of 5000l. to do this; and at this meeting the directors will call the attention of the shareholders to the necessity of raising this fresh capital, and the best mode of doing so can be then discussed and decided upon. The ordinary expenses and receipts nearly balance; the amount remaining at the credit of the reserve fund will soon be absorbed; and the directors are of opinion that, to ensure the future satisfactory working of the company, it is absolutely necessary that the sum indicated should be raised forthwith.

Roman Gravel,  $\frac{1}{2}$  to  $\frac{3}{4}$ ; on Thursday last 250 tons of lead ore were sold, and realised 167 ft. The 110 north is in a lode 3 $\frac{1}{2}$  ft. wide, worth 4 $\frac{1}{2}$  tons lead ore per fathom, and the 80 south is worth 4 tons per fathom.

Tankerville,  $\frac{1}{2}$  to  $\frac{3}{4}$ ; a sale of 30 tons of lead ore and 40 tons blende took place on Thursday last and realised 363 ft. At the Pennerley Mine in the 93 west the lode in the winze is 7 ft. wide, and worth 3 tons lead ore per fathom, the two stopes in the back being worth together 4 tons per fathom. The returns both from the Bog and Tankerville portion of the mines are about the same.

Leadhills,  $\frac{1}{2}$  to  $\frac{3}{4}$ ; the various points of operation are about the same as at last report, and the mine is looking well.

At the Stock and Share Auction and Advance Company's sale on Thursday, in Lombard-street, City, the prices obtained, among others, were:—London Road Cars, 10l. shares, 50s. to 52s. 6d.; Grosvenor Gallery Library, 5l. shares, 35s.; Grange Trust (Canada), 50l. debentures, 5l. 10s.; Tregontrees and Old Polgooth, 1, 1 $\frac{1}{2}$ ; Hotel Bristol, 100l. debentures, 80 per cent.; Nouveau Monde, 4s. 9d. Other miscellaneous securities fetched fair prices.

Messrs. C. de Murrieta and Co. notify that the dividend due March 1 on the Argentine Government Six per Cent. Public Works Loan, 1871, will be paid on and after that date by them.

GAS SHARES.—The principal business in these shares, according to this evening's report of Messrs. W. L. Webb and Co., of the Stock Exchange and Finch-lane, has been:—Bahia 10 per cent. Preference, 26 $\frac{1}{2}$  to 28 $\frac{1}{2}$ ; British, 40 $\frac{1}{2}$  to 41 $\frac{1}{2}$ ; Buenos Ayres New (Limited), 103 $\frac{1}{2}$  to 105; Cagliari Gas and Water (Limited), 23 $\frac{1}{2}$ ; Commercial Consolidated, 246 to 247; Continental Union (Limited) Original, 33 $\frac{1}{2}$  to 34; ditto, New, 1889 and 1872, 23 $\frac{1}{2}$ ; ditto, ditto, 7 per cent. Preference, 20 $\frac{1}{2}$ ; European (Limited), 19 $\frac{1}{2}$  to 19 $\frac{1}{2}$ ; Gas Light and Coke, A. Ordinary, 204 $\frac{1}{2}$  to 205; ditto, D. 10 per cent. Preference, 221 $\frac{1}{2}$ ; ditto, F. 5 per cent. Preference, 109; ditto, H. 7 per cent. Maximum, 183 $\frac{1}{2}$  to 144 $\frac{1}{2}$ ; ditto, J. 10 per cent. Preference, 224 $\frac{1}{2}$ ; ditto, K. 4 $\frac{1}{2}$  per cent. Debenture stock, 113; ditto, 6 per cent. Debenture stock, 152; Imperial Continental, 185 to 190 $\frac{1}{2}$ ; Monte Video, 15 $\frac{1}{2}$  to 16 $\frac{1}{2}$ ; Oriental (Limited), 6 $\frac{1}{2}$  to 7 $\frac{1}{2}$ ; Rio de Janeiro (Limited), 24; South Metropolitan, A, 257; ditto, B, 219 to 221; ditto, Perpetual 5 per cent. Debenture stock, 127 to 127 $\frac{1}{2}$ . Imperial Continental Gas firm, other stocks steady.

INSURANCE SHARES have, according to this evening's report of Messrs. W. L. Webb and Co., of the Stock Exchange and Finch-lane, been dealt in as follows:—Alliance British and Foreign, 33 $\frac{1}{2}$  to 39; ditto Marine (Limited), 21; City of London Marine Insurance Corporation (Limited), 5 $\frac{1}{2}$ ; Commercial Union, 18 $\frac{1}{2}$  to 18 $\frac{1}{2}$ ; County Fire, 150 $\frac{1}{2}$ ; Employers' Liability Assurance Corporation (Limited), 2 $\frac{1}{2}$  to 2 $\frac{1}{2}$ ; Equity and Law Life, 20 to 20 $\frac{1}{2}$ ;

Fire Insurance Association (Limited), 11 $\frac{1}{2}$  to 11 $\frac{1}{2}$ ; Guardian Fire and Life, 62 $\frac{1}{2}$ ; Lancashire, 43 $\frac{1}{2}$ ; Law Life, 115 to 115 $\frac{1}{2}$ ; Liverpool, London, and Globe (L. Annuity), 24; London, 55 $\frac{1}{2}$  to 56 $\frac{1}{2}$ ; London and Provincial Marine (Limited), 4 $\frac{1}{2}$ ; Marine (Limited), 27 $\frac{1}{2}$  to 27 $\frac{1}{2}$ ; North British and Mercantile, 25 $\frac{1}{2}$  to 25 $\frac{1}{2}$ ; Ocean Marine, 51 $\frac{1}{2}$  to 51 $\frac{1}{2}$ ; Phoenix, 222 to 223; Provident Life, 33 $\frac{1}{2}$ ; Royal Exchange, 385 to 390; Standard Fire Office (Limited), 5 $\frac{1}{2}$ ; Universal Marine (Limited), 7; Insurances Idles. North British, Mercantile, and Thames and Mersey firm. Others steady, especially marine companies.

TRAMWAYS.—The closing prices of this evening, as quoted by Mr. Wm. Abbott, of Tokenhouse-yard, are given in tabular form in the last page of the Journal.

RAILWAY AND GENERAL MARKETS.—Referring to the course of business done to-day during official hours (11 to 3) Mr. Ferdinand R. Kirk Birchington, writes:—Opening: Trunks keep very firm, the Ordinary being still 16 $\frac{1}{2}$  to 17, and the Thirds 40 $\frac{1}{2}$  to 41, which is a rise of 4 since last Friday. Mexican Railway are 45 $\frac{1}{2}$  to 46, last week the price was over 55. Hull and Barnsley are quoted 3 $\frac{1}{2}$  to 4 $\frac{1}{2}$ , 10 $\frac{1}{2}$  paid Great Easterns are 59 to 59 $\frac{1}{2}$ , and Brighton A 103 $\frac{1}{2}$  to 103 $\frac{1}{2}$ , 7 $\frac{1}{2}$  lower. Erie 27 $\frac{1}{2}$  to 28, Readings 28 $\frac{1}{2}$  to 29 $\frac{1}{2}$ , Atlantic First Mortgage 46 $\frac{1}{2}$  to 46 $\frac{1}{2}$ . Mining shares are in better demand at higher quotations. Old Shepherds, 3 $\frac{1}{2}$  to 4; East Wheel Rose, 3 $\frac{1}{2}$  to 4; Home Mines Trust, 3 $\frac{1}{2}$  to 4; Tresavean, 3 $\frac{1}{2}$  to 4; United Mexican, 9 $\frac{1}{2}$  to 10 $\frac{1}{2}$ ; Wheel Orebor, 2 to 2 $\frac{1}{2}$ ; Bratsberg, 1 $\frac{1}{2}$  to 1 $\frac{1}{2}$ ; Devon Friendship, 1s. 6d. to 2s. 6d.; South Caradon, 1 $\frac{1}{2}$  to 2 $\frac{1}{2}$ . Closing: Prices have rather given way, especially in Trunks, the Ordinary are only 16 $\frac{1}{2}$  to 16 $\frac{1}{2}$ , while the Thirds have fallen to 39 $\frac{1}{2}$ , 39 $\frac{1}{2}$ . United show no change. American shares maintain their price, and Mexican railway stock is steady. Rio Tinto, 19 $\frac{1}{2}$  to 19 $\frac{1}{2}$ ; Mason and Barry, 12 $\frac{1}{2}$  to 12 $\frac{1}{2}$ ; Onontales, 3s. to 4s.; Victoria Gold, 3 $\frac{1}{2}$  to 4 $\frac{1}{2}$ .

GOLD AND SILVER.—Messrs. FIKLEY and ABELL (Feb. 14) write: With the exception of 20,000l., sovereigns, taken from the Bank for South America, there has been but little demand for gold; and sovereigns and bars, to the value of 211,000l., have been sent in. The arrivals since our last have been 11,000l. from Australia, 11,000l. from West Indies, 46,000l. from New Zealand, 110,000l. from the Cape, 175,000l. The Tamar has taken 45,000l. to the Brazil, and the Peninsular and Oriental steamer 10,000l. to Calcutta. An improvement in the value of silver bars has taken place, and the price may now be quoted as 51 $\frac{1}{2}$ d. per oz. standard; the demand has been for India. We have received since our last 40,000l. from Chili, 71,000l. from West Indies, 60,000l. from New York, 107,000l. The Peninsular and Oriental steamer has taken 113,000l. to India. The quotations for bullion are:—Bar gold, fine, 77s. 9d. per oz. standard; bar gold, containing 20 dwts. silver, 77s. 10 $\frac{1}{2}$ d. per oz. standard; Spanish doubloons, 73s. 5 $\frac{1}{2}$ d. to 73s. 10d. per oz.; South American doubloons, 73s. 8 $\frac{1}{2}$ d. per oz.; United States gold coin, 78s. 3 $\frac{1}{2}$ d. per oz. Bar silver, fine, 51 $\frac{1}{2}$ d. per oz. standard; bar silver, containing 5 grs. gold, 51 $\frac{1}{2}$ d. per oz. standard; cake silver, 55 $\frac{1}{2}$ d. per oz.; Mexican dollars, 49 $\frac{1}{2}$ d. per oz.; quicksilver, 5l. 5s. Discount, 3 per cent.

OSCAR GOLD MINE.—It is a very important fact in estimating the value of this property that some time ago there was broken at about 150 fms. south of the shaft, from which most of the rich auriferous stone has hitherto been obtained, a piece of clay-slate, which was assayed, and yielded 13 ozs. of gold per ton. It is believed by practical authorities who have visited the mine that a large quantity of the country rock, or strata through which the lode runs, will pay well. Machinery and stores can be landed close to the mine in summer, and there is a good harbour about 3 miles off, which is available in winter, and is always accessible. We are informed that the company have duly completed the acquisition of the property, and no time will be lost in erecting the necessary machinery.

BRATSBERG.—The monthly report received this week is again most satisfactory, the different points in operation being worth 467 ft. The water is drained from York's shaft, where the working on a rich lode will be resumed.

KIMBERLEY CENTRAL DIAMOND MINING COMPANY.—At the London meeting of the shareholders of this company held yesterday, it was stated that the Rose-Innes Company, with 12 $\frac{1}{2}$  claims, had been amalgamated with the Central Company, and that the South-East Company will shortly be amalgamated with it. The Cape Legislature has recently passed a new mining ordinance, the effect of which is to place this company on a better footing than it has hitherto occupied. A full report will appear in next week's Journal.

DEVON FRIENDSHIP.—They expect to cut Kent's main lode in the adit next month, and hope to find it as rich for copper as it was formerly east of the cross-cut.

TANKERVILLE.—At Bog there are a number of pitches at work, and this week there were sold from here 30 tons of lead for 203 ft. 5s., and 40 tons of blende for 161 ft. At Tankerville the winze under the 232 is worth 1 $\frac{1}{2}$  ton, and the 232 east 1 $\frac{1}{2}$  to 2 tons per fathom. The stopes on the north lode are valued at 1 $\frac{1}{2}$  and 2 tons of lead and 1 $\frac{1}{2}$  ton of blende per fathom.

ST. JUST UNITED.—At the meeting on Feb. 8 the accounts showed a debit balance of 1281l., which was about 50l. less than the profit on the last 16 weeks' work. The balance due from the late purser was 1898l., and the adventurers instead of proving against his estate accepted his shares in discharge of the debt. The mine is reported to be looking as well as it has for some time past.

WEST SETON.—At the meeting on Thursday the accounts showed a loss on the 16 weeks' working of 1976l., and a total debit balance of 8273l. A call of 25s. per share was made.

CORNISH MINING—OLD SHEPHERDS, AND THE NEIGHBOURING MINES.—It has more than once been remarked with regard to mining enterprise that adverse criticism is far better evidence of intrinsic value than the most glowing reports or the most complete silence, and in the case of the so-called East Wheel Rose group the speculation in the shares almost eclipsed consideration of what was being done at the mines, whence many supposed that the executive had been neglectful of their duties, and adverse observations and unnecessary fears were the consequence. It is now ascertained, however, that the progress made has been rapid and satisfactory, and that the prospects are certainly better than they were when the concerns were started, and it is confidently asserted that in a very short time all doubts as to the value of the mines will be removed. At the present moment attention is chiefly directed to Old Shepherds, with reference to which some interesting details are given by Mr. Charles Bowden, of St. Day. The comparisons which he makes are certainly striking, whilst his facts are indisputable.

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50 Flagaft. 25 Polrose. 50 West Phoenix.

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### Notices to Correspondents.

**FACTS AND FALLACIES.**—With reference to the letter of "Wynand Miner" in last week's Journal, would that gentleman kindly explain how he reconciles his theories with the fact that from the Balaghat Mine 243 ozs. of gold were got out of about 40 tons of quartz crushed.—N.L. DESPERANDUM.

**GOLD.**—Will some correspondent state through the Journal who is now considered the principal authority on the extraction of gold and silver from quartz and other ores of the present day? and is there any system par excellence for the purpose? Have any practical tests yet been made of Huntington and Koch's method, and has any pulveriser yet been invented that does the work cheaper or better than the old-fashioned stamps.—GOLD SEEKER: Dr. Stephen's Club.

**GOLD AMALGAMATION.**—Can any correspondent inform me, through the Journal, where I can see the Wave-Plate Gold Amalgamators at work; or if Messrs. Huntington and Koch's method of extracting gold and silver from their ores has been a practical success, or where it is in use?—F. BOND.

**HYDRAULIC MINING.**—"T. C." (Bradford).—The decision in the North Bloomfield Case practically prohibits hydraulic mining in the counties drained by the Yuba River and its affluents—that is, Sierra, Nevada, and Yuba. Notices of appeal have been given by the company, but the perpetual injunction will almost certainly be confirmed, as the injury to valuable land done by the debris is enormous. When 1 in. nozzles were used there was at least a faint chance of the debris being washed down, but with the 6 in. and 8 in. nozzles now employed the rivers are choked, and large tracts of fertile country made barren by being covered with the debris.

**FREE TRADE AND PROTECTION.**—"K. C." (Manchester).—Nothing has appeared editorially in the Mining Journal "condemning" of Free Trade, and each correspondent is responsible for his own opinions. Whatever may be the advantages of Protection it is admitted that the difficulty of returning to it now would be almost insuperable. Moreover Protection in England would be powerless to stop the output of Spanish pyrites, of Australian and East India tin, or of United States lead, whilst it would raise the price of copper, tin, and lead in England to such an extent that there would be no market for any of them except for British home consumption. What would seem to be wanting is Reciprocity on a Free Trade basis, and this is all most correspondents ask for.

**PRACTICAL MINING.—VALUATION OF COPPER ORE AND PAYMENT OF TRIBUTARIES.**—"W. T." (Redruth).—The word *pace* is as you conclude omitted. In the fifth line from bottom of second column, page 177, it should have read "by allotting two pence to each," &c. The decimal fraction can always be obtained by writing the figures from the bottom upwards and dividing by the number of the next lowest denomination. Thus if it be required to find what fraction of a ton of 21 cwts. and of a ton of 20 cwts. respectively represents 17 cwts. 2 qrs. 14 lbs. the process is this—

Ton of 21 cwts.	Ton of 20 cwts.
21 7/14	20 7/14
21 4/7	20 4/7
21 2/7	20 2/7
21 1/7	20 1/7
21	20
20 14/21	20 14/20
20 13/21	20 13/20
20 12/21	20 12/20
20 11/21	20 11/20
20 10/21	20 10/20
20 9/21	20 9/20
20 8/21	20 8/20
20 7/21	20 7/20
20 6/21	20 6/20
20 5/21	20 5/20
20 4/21	20 4/20
20 3/21	20 3/20
20 2/21	20 2/20
20 1/21	20 1/20
20	20

The divisors are 28, because there are 28 lbs. in the quarter; 4 because 4 qrs. = 1 cwt.; and 21 and 20 respectively because those are the number of cwts. in the ton. The starred figures are those representing the 17 cwts. 2 qrs. 14 lbs. The decimal fractions of a fathom, of a hundred, of a foot, are readily found by the same process. You can readily construct the tables for yourself; they are scarcely suitable to publish in a newspaper.

**ROYAL METALS.**—Will some correspondent kindly state through the Journal what is the law as to the precious metals in the United Kingdom? I am told that the State claims all gold and silver; is that so? I thought some mines had been worked for gold in Wales, such as Clogau, &c.; and if so I presume some arrangement was first come to as to the State's claim to dues.—G. R. BROWN.

**Received.**—"W. D." (Durham): Inserted; the references are ample; always glad to receive similar communications.—"S. M." (Dudley): Thanks.—"Lombard" (Leeds): The Trust and Agency Company's address is Lombard-street, E.C.; probably your letter was incorrectly addressed; Mr. H. W. Lee is the secretary.—"V. and Co."—"F. K.": Attended to.—T. A. Readwin, F.G.S. (Gold Amalgamation): Unfortunately too late for this week; shall appear in our next—"Veritas" (Redruth): Ditto—"E. S. P." (Cardiff): Answered by post—"F. A. S. C."—"R. B."—"H. B." (Colne): The transfer ought to have been handed to you before this. You are unlikely to be paid until you hand over the transfer—"W. C. S."—"J. L. P." (Perranarworthal): The name is never given up, but any reply for publication or other reference to the matter will receive attention.—"C. S. R." (Alma): Replied to by post—"D. B." (Kendal): We do not know the name of the mine referred to; therefore, your memorandum is unintelligible to us—"C. C." (Redruth): Complished with—"J. S." (Tremouth): Will endeavour to notice the matter next week—"H. H." (Nelson): When a correspondent signs his name, the reply should be similarly signed. Although a pseudonym has been used to a previous letter—"J. G." (Nacpaul): Your reply to Mr. Nicholson will have every attention when received.

## THE MINING JOURNAL, Railway and Commercial Gazette.

LONDON, FEBRUARY 16, 1884.

### MINING CASUALTIES

The recent fatal casualties in the South Wales district should teach salutary lessons to the whole mining and scientific world. Explosions and fatalities will ever take place, despite the greatest precaution, so long as human nature is fallible. A recent writer on boiler explosions would wish the public to infer from his observations that there was no such a thing as "accident," he contending that with proper care and attention to well-defined rules and regulations and instant regard to automatic warnings of danger, boiler explosions should be a thing of the past. That much carelessness exists in reference to boiler management no one can doubt; but, on the other hand, practical experience cannot endorse the theory that no explosion will or can occur under any circumstances whatever. The same remarks will apply to colliery explosions and casualties. No doubt there is contributory negligence in far too many cases of colliery explosions; but there are undoubtedly many cases of pure and simple accident, which the present state of our mining knowledge cannot altogether prevent, and which, therefore, it would be useless to endeavour to ignore. The accidents which are constantly occurring should induce careful enquiry and scientific investigation, in the hope that salutary lessons should be taught, and if possible steps adopted which should, at all events, reduce the frequency and extent of such distressing events.

The importance of careful attention to atmospheric changes is becoming more recognised by colliery managers. Its importance can scarcely be over-estimated. In the preliminary report of the Royal Commissioners on mining disasters, published some three or four years since, expression was given to the belief that explosions occur

with southerly (south-westerly to south-easterly) winds, and it was stated that since the year 1800 no explosion had been known to have occurred with a northerly wind. This is a startling assertion to make; but its accuracy should scarcely be questioned, inasmuch as it would not have been made by the Commission without the most conclusive evidence. But if such was true prior to the issue of the Commissioners' report facts since that date prove that explosions do occur with winds north of west and east, the wind being almost due north in the Cadder explosion on Feb. 24, 1881; the Lilydale explosion on May 3, 1881; at Clayhall on the 8th of the same month; at West Bromwich on the 26th of the same month; at Merthyr on July 16; and at Hartington on Sept. 2. With respect to atmospheric pressure many explosions seem to support the theory that the most dangerous time is that when the barometer is high, although the explosion in many pits, and notably the recent one in the Penygraig Colliery, Glamorganshire, took place when the barometer was exceedingly low. However, we believe figures will prove a preponderance of explosions with a high barometer. Mr. JOSEPH THOMPSON, of Manchester, some few years ago gave the mining world the result of an extended period of observation on this subject, and stated that "the gas in the pit spoke out loud and clear long before any change could be discerned in the mercurial barometer." Mr. EVANS, the Government Inspector of Mines for the Derbyshire district, reporting upon 16 non-fatal explosions in his district in 1880, says—"It is curious to note that eight of the explosions occurred whilst the barometer was rising, four whilst it was steady, and four when it was falling." Whilst Mr. DONSON, in writing on "Colliery Explosions and Weather," contends that an altogether erroneous value is attached to a low barometer, giving it as his opinion "that the explosion may be deferred until the storm has entirely passed over, and the mercury has regained the height and stability peculiar to settled weather." There is thus considerable divergence of opinion amongst authorities as to barometric influences; but with more careful observation it does not seem unreasonable to expect that barometric pressure will receive even greater attention than it has hitherto done in connection with its influence upon the existence of gas in mines.

Another lesson which the recent explosions in South Wales should teach is the great risk attached to shot-firing in mines. There is too much reason to fear that the recent explosion in the Penygraig Colliery was the result of shot-firing or blasting. Mr. D. H. DANIELS, the manager, and Mr. EDWIN RANDALL, the Deputy Inspector of Mines for South Wales, made a careful examination of the workings after the explosion, and found that the hole, which it was one of the men's (WILLIAMS) duty to fire had been fired off, and had shattered the rock. It would have been his duty in the absence of DANIEL JAMES to fire the other one, which was situated in another part of the workings, and it is significant that he did not reach that hole, which was still charged with the fuse as left on the Saturday. WILLIAMS' dead body was found at a spot 70 yards in a straight line from the hole which he fired, and it is, therefore, inferred that the gas fired when the hole exploded, and that he was hurled in the blast to the spot where his body was afterwards found. We have repeatedly urged the danger of all shot-firing in mines, contending that a law should be made imperative prohibiting the use of a single grain of gunpowder under any circumstances whatever. No discretion even with the most careful and experienced manager should be given, as risks are always run, and human life is far too valuable and sacred to be risked for mere pecuniary considerations. We are sadly afraid the Penygraig explosion must be numbered with those resulting from the use of gunpowder, and it should teach the lesson of entire prohibition.

The deplorable catastrophe in the Garnant Colliery, whereby ten poor fellows lost their lives by the breaking of the rope is in an altogether different category. It has been the subject of a most careful and painstaking enquiry by the Coroner for the district, and has abundantly testified to the strength of the rope, and the evident care with which it had been manufactured. Whoever may be to blame (if blame is attributable to anyone) the Messrs. ELLIOTT and Co. are clearly exonerated—the official inspection proving that it was one of the best ropes ever manufactured, more than sufficient to bear any ordinary strain placed upon it. The cage contained in its descent on the fatal occasion two more men than the rules of the pit allowed; but it was probably a sudden jerk which caused the rope to snap, and to lead to the melancholy result. However we may deplore these events, we are afraid all past experience proves that even with the most careful management accidents will sometimes happen, and we can scarcely expect an immunity in the future. We can only hope that the past will teach salutary lessons for the future, and that by taking advantage of all scientific and mechanical progress seek to place additional safeguards around the lives of those engaged in such dangerous avocations.

### THE ASCENDING AND DESCENDING OF MINES AT THE SAME TIME.

The award just made by the arbitrators appointed according to the provisions of the Mines Regulation Act respecting the question of winding men against men at the Barrow Colliery, near Barnsley, to say the least is most unsatisfactory, and has caused great dissatisfaction amongst the miners of the district. The men complain, and certainly with justice, that a necessary precaution for ensuring the safety of the workmen has been set aside by the arbitrators, both of whom were mining engineers, and the umpire, who was a colliery owner. The men, the parties really interested, had no say in the matter, although they were the complainants in the first instance. The facts of the case are of no ordinary interest and importance, to the mining body in particular. It appears that in virtue of the Act of 1872 special rules were duly established at Barrow, and were in force up to June last, when the men took exception to one of them, the 68th, which was as follows:—"The engineman, banksmen, or hanger-on shall not let a boy (under 15 years old) go up or down the pit unless accompanied by a man, and shall not permit more than ten persons to ascend or descend at once. A per on shall not ascend or descend with or against a corf or loaded cage, and shall not take with him rails, props, or other bulky materials, and shall not get into or out of the cage until it is at rest, and if at the surface upon the landing-floor or frames." As this meant that the cages loaded with men should go up and down the shaft at the same time, a practice which is certainly attended with danger, the men took exception to it, and requested the Home Secretary to use the power he had under the Act to alter, amend, or add to the special rules. Accordingly, on June 30, 1883, Sir W. VERNON HARCOURT addressed to the owners and manager of the colliery a new special rule, being a copy of the existing rule, with the addition of the words "shall not descend when another is descending, or the contrary," and also introduced between the words "person" and "shall" in such existing rule. Notice of objection to the new or corrected rule was then given by Mr. KELLET, the agent of the owners, and the matter, under the provisions of the Act, was referred to arbitration.

It may be said that although the ascending and descending of cages at the same time is carried on at several mines, yet such is the exception and not the rule, but there can be no two opinions as to which is the safest system. Cages have at times met when perhaps in the centre of the shaft, resulting in both loss of life and injury as well, so that as the object now is to ensure the greatest amount of safety to those engaged in mining operations such would undoubtedly be best secured by only allowing one cage to be in the shaft at the same time; not quite so much time would be lost in so doing, seeing that the double winding of any consequence only takes place on the changing of shifts. In addition, however, to the question of winding men against men there is the further one as to the persons appointed as arbitrators and umpires. In a question between workmen and employers one would think where there was a reference both parties would be represented. But this was not the case at the Barrow Colliery, for all the parties nominated were interested in mines, but not as workmen, and this is what the men complain of, and rightly as we think. The Home Secretary having altered the rule as desired by the men took the place of the latter in the arbitration, and appointed Mr. T. W. EMBLETON, an old and experienced mining engineer, and who has also been a colliery proprietor, as arbitrator for him. Mr. JACOB HIGSON, also a mining engineer, and

interested in colliery property, was appointed arbitrator for the company, and Mr. T. CARRINGTON, of Kiveton Park, colliery owner, was made the umpire. Such a tribunal was not likely to secure the confidence of the men, and from the first they had no faith in it, nor could they be expected to have. Indeed, the award was just what might have been expected, being "dead" against the men.

The arbitrators and umpire say "They award and determine that Rule 38 shall remain unaltered as in force previously to June 30, 1883," and shall be read as given above. This was all the owners asked for, whilst they had also the satisfaction of being freed from all expenses; for Messrs. EMBLETON, HIGSON, and CARRINGTON kindly added a rider to the award, after stating that the new special rule proposed by the Home Secretary shall not apply to the colliery. "That the costs of the said arbitration and award shall be paid by the said Right Hon. Sir W. VERNON HARCOURT, as such Secretary of State." Such a decision, in our opinion, will be more prejudicial to the owners of coal mines than otherwise, for it will give the representatives of the miners a substantial footing in asking for an alteration of the Mines Regulation Act, doing away altogether with two cages loaded with workmen being in a shaft at the same time. It will also be the means of directing attention to the appointment of arbitrators and umpires in cases where the interests and safety of the workmen are those only involved. The experience the Home Secretary has had in connection with the Barrow arbitration must necessarily incline him to believe that the workmen have scarcely had fair play in the matter, seeing that the persons who acted as arbitrators and umpire were those whose sympathies could not be expected to be on the side of the working miners. It is not often that we agree with Mr. PICKARD, yet there is considerable force in the remark which he has appended to the printed copy of the award—"Anyone unbiassed can see it is not to the interest of the mining community that colliery owners and mining engineers should arbitrate for themselves."

### THE DESTRUCTION OF A VILLAGE BY MINING.

In the annals of English mining there is no such record of wholesale destruction of property as that which took place principally last year, culminating in the almost total effacement of the village of Boosbeck, in the Cleveland district, owing to the working of the ironstone. The history of the affair was given at the Leeds Assizes last week, when two or three days were occupied in the hearing of one or two test actions for the recovery of damages for the loss of property owing to the subsidence of the surface by the taking away of the iron ore that should have been left as supports. It appears that in 1874 JACKSON, one of the defendants, was the owner of considerable property in Boosbeck, and sold certain plots, covenanting that houses should be built upon them. In 1879 Mr. JACKSON also granted a lease to Messrs. STEVENSON and JAMES to work a considerable area of ironstone under the property, covenanting with the firm named (also defendants in the action) that the rent for the first two years should be on an annual output of 15,000 tons, and 30,000 tons per annum for the remainder of the lease of 20 years. It was also covenanted that barriers should be left for the support of the surface such as the lessor should reasonably require. The firm raised about 40,000 tons of ironstone, and left a goaf in one direction of about two acres in extent, as well as another in a different direction. Mining operations went on all right until one fine day in December, 1879, when the residents of one part of Boosbeck were greatly astonished to find their houses coming down with a run—broken and crushed. This was at a place called London-terrace. But this was comparatively trifling to what occurred in July, 1883, when the Albion-street houses fell to pieces, the occupiers having as much as they could do to save their furniture and effects. These people had to look out on very short notice for fresh quarters, which in not a few instances was a matter of difficulty. A great deal of mining and technical evidence was given, in which it was stated *inter alia* that Mr. JACKSON, the lessor, had gone down the mine, and being desirous of being paid for as much of the ironstone as it was possible to get, ordered that some 85 ft. pillars, or supports, should be reduced, and this in itself tended to lead to subsidence.

On behalf of Messrs. STEVENSON, JAMES, and Co. it was contended that they were not liable, as the damage was not done by them, but by the Clay Lane Iron Company, owners of the South Skelton Mines. The Judge in this complicated case left several questions for the decision of the jury. The jury found that the stone was worked and gotten by both JACKSON and STEVENSON, JAMES, and Co., and that the stone was not worked and gotten in a good, orderly, and workmanlike manner. The jury also found that the stone was not so worked and gotten according to the best and most approved and customary manner of getting and working mines of ironstone of the like quality and description. The jury also held that the ironstone was worked and gotten under and in accordance with the orders and directions of JACKSON. This being a verdict for the plaintiffs, the Judge appointed Mr. PORTER, of Sunderland, as the arbitrator, he holding a similar appointment in 14 other of the actions. It is almost needless to say that the cost of the subsidence will be heavy, as will also the legal expenses, seeing that quite a number of Q.C.'s, as well as junior counsel, were engaged by the respective parties.

### SCOTCH PIG-IRON WARRANT MARKET.

Mr. W. WILSON (Glasgow, Feb. 14) writes:—The warrant market has further declined, and touched 42s. 6d. on Friday last. This is the lowest price since 1879. A very quiet feeling still prevails in iron circles here, but a firmer tone comes from across the Atlantic. The arrangement came to at Cleveland to blow-out furnaces at the end of the month is maintaining the price of No. 3 there fully 1s. per ton above the quotation of a month ago. As usual in times of severe depression like the present interested people are circulating stories about the quality of the iron now made being not the same as when higher prices prevail; but this is not the case, and such insinuations cannot be too strongly censured. Shipments for the week do not compare favourably. Two furnaces have been re-lighted at Kinnell Works, making the number blowing 97. 1293 tons were put into store here last week, while 200 tons were taken out at Middlesbrough. Business was done during the past week at the following prompt cash prices:—

Thursday, Feb. 7.	Friday, Feb. 8.	Monday, Feb. 11.
42/7 1/2, 42/6, 42/5 1/2	42/7 1/2, 42/6, 42/5 1/2	42/8, 42/7 1/2, 42/7 1/4, 42/6 3/4
Tuesday, Feb. 12.	Wednesday, Feb. 13.	Thursday, Feb. 14.
42/7 1/2, 42/6, 42/5 1/2	42/6, 42/5 1/2	42/7 1/2, 42/6 3/4
1884.	1883.	1882.
Price of Scotch Warrants, Feb. 11...	42/8 1/2	47/8
Furnaces in blast in Scotland do...	97	110
Iron in store at this date...	592,249	597,429
Shipments of Scotch pig-iron for 1 week ending Feb. 9...	8,900	12,530
Do. since beginning of year...	55,693	63,834
Price of Middlesbrough No. 3, Feb. 11	36/9	40/9
Furnaces in blast Middlesbrough dist.	118	121
Middlesbrough Iron Imported at Grangemouth, week ending Feb. 9	6,980	1,930
Do. do. since beginning of year	37,400	28,381
		39,629
		27,578

### QUICKSILVER.

	1883.	1884.
Imports from Jan. 1 to Jan. 31, bottles about	362	about 4,617
Exports	5,192	4,381
Price per bottle, about	£5 10 0	£5 5 0
Stock in London to Jan. 31, 1884, roughly calculated, is about	77,200 bottles.	

London, Feb. 13. J. BENNETT BROTHERS.

**VALUABLE DISCOVERY OF LEAD ORE.**—A valuable discovery of silver-lead ore has been made in Wolsingham Park, about seven miles south-west of Consett. Splendid rocks of ore are being raised to surface from a north and south vein, and an analysis has been made which proves it to be very rich for silver, producing from 26 ozs. to 48 ozs. of silver per ton of lead, probably the richest ever discovered in the North of England; an east and west vein has also been met with, producing fine samples of ore. This royalty formed a part of



the Weardale royalty recently held by Mr. W. B. Beaumont, M.P., but came into the hands of the Ecclesiastical Commissioners on his relinquishment of Weardale, and is now being worked by Messrs. J. W. Davison and Sons, of Consett. This industry has been in a very depressed state for some time past, and it is encouraging that the enterprising energy of Messrs. Davison have been successful, as by this discovery an entirely new mining field has been opened.

#### REPORT FROM CORNWALL.

Feb. 14.—There certainly is a distinct improvement in the situation since our last report, although it is founded upon little more than a general idea that matters cannot continue much longer in their present depressed state. The fact that the county is not raising sufficient metal to meet the demand for Cornish tin, though it has been questioned, is certainly one of the factors in producing this result, for it is seen that in the long run, under such conditions, prices cannot be kept down. It is felt that while statistics may be open to doubt, and while unfortunate experience has proved that favourable figures may co-exist with very unfavourable prices—the absence of stocks in the hands of Cornish smelters is a fact that is only susceptible of one interpretation, and that a reassuring one. Here it is the quality of our produce that tells. On the other hand, it seems to us that there is little to hope from the general aspect of trade, which shows no indication of such a speedy and substantial revival as we need. So far as individual mines are concerned, we have again, however, entered upon a period in which speculation and investment is likely to be well repaid. No doubt there will be some weeding out, the subjects of which will have to be avoided; but, on the other hand, there are improvements in progress that cannot fail to have very important results. But it must be borne in mind that this is not a time for starting or joining new ventures, so much as for sticking to and developing concerns already in existence.

The improvement which has already taken place at such mines as Tincroft and Carn Brea is, to our thinking, likely to prove no merely isolated gain, but to be largely representative. It will have just now the further advantage of encouraging the continued prosecution of several concerns that are on the very verge of abandonment, and that, indeed, can only be saved by prompt and decided action, and the action must be really decided. Financial difficulties must be settled at once, whatever the cost, or all efforts at economy in working will be practically thrown away.

The possible fate of Blue Hill and Penhalls emphasises the need, too, of very decided action, on the part of mine adventurers generally, on the dues question. It is really not enough in these days to talk of partial remissions, and the only lord of these two sets that has risen to the level of the occasion, is Mr. Hancock at Blue Hills. Why the Duke of Buckingham should have made no sign is not within our province or power to explain; but it may be due to the ignorance of the peculiar needs of a locality, which is the great bane of absenteeism everywhere. The fate of these two promising mines is just now in the balance, and, hard as it may seem to sacrifice the results of so much outlay and labour, we believe the wisest course will be, if the lords will not throw their lot in with the adventurers and the working miners, to suspend. These are not times for half measures, and it would be mistaken kindness either to suggest or endorse them.

A very natural amount of dissatisfaction is being expressed with regard to the arrangements proposed for the acceleration of the up mail train on the West Cornwall and Cornwall railways. There is no doubt that the extreme west of the county and the distant outlying districts are at present very badly served, for the mail train leaves Penzance at 3.50 P.M., and in the places more distant from the rail barely gives opportunity for receipt and reply the same day. The delay of the train to a later hour, and the quickening of its speed are, therefore, highly essential, and have long been the occasion of fruitless agitation. Now, however, a change is to be made commencing on March 1 next, after long preparation, and it is to be made in such a manner, that so far as passengers are concerned it is quite possible that more people will be inconvenienced than gainers. For example, it will hardly be believed that two of the places at which it is proposed the mail train shall not stop in future are Camborne, with all its mining industry, and Par, the junction of the thwart-country line between Fowey and Newquay, which serves the great china-clay district. It is difficult to understand why these places, of all others, should be left out in the cold, and there may yet be time for those who are personally interested—especially men of business resident in the Metropolis—to press this matter upon the Paddington board. If anything is to be done it is quite certain that no time is now to be lost. There are a good many changes now-a-days that have a very qualified advantage.

#### REPORT FROM DERBYSHIRE AND YORKSHIRE.

Feb. 14.—At the ironworks in Derbyshire a fair amount of business continues to be done in both pig and manufactured iron, although there is considerable depression in the Cleveland and other leading centres of the raw iron trades. In Derbyshire, however, in nearly all cases the producers of pig-iron are also large consumers of it. The Staveley Company, having several furnaces in blast and obtaining ironstone from both Northamptonshire and Lincolnshire, uses a large quantity at their extensive foundries, noted for pipes, cylinders, pillars, and other heavy castings. At Clay Cross, in addition to the furnaces, there are extensive foundries, whilst at Sheepbridge there are also mills in addition to the foundry, and the same may be said with respect to the Butterley and Stanton Companies. In Sheffield and the district there has been little or no change in either the iron or steel trades. The lighter steel branches are still quiet, whilst the mills engaged on composite armour-plates continue busy, and are likely to be for many months to come. Most interest, however, appears to be taken in the progress of the coal trade in both Derbyshire and the West Riding after the long agitation which has been going on amongst the miners. Indeed, the coal trade is now in a more depressed state than it has been for a long time past, without much likelihood of its getting better. Its actual state will be fully seen from a return of the coal traffic by railway to London, especially as regards the Midland field—from Nottingham to Leeds.

There was a marked falling off in the quantity of coal sent to London by railway in January as compared with either of the two previous months. This was principally owing to the agitation on the part of the miners for an advance of wages towards the close of last year, causing merchants, dealers, large private consumers, as well as the gas and railway companies, to lay down exceptionally large stocks, in anticipation of a strike of the miners in Derbyshire, the West Riding, and Nottinghamshire. Consequently, when the miners abandoned all hopes of obtaining an advance of wages, and the trade became settled, the supplies in all directions were so heavy that the ordinary requirements were much less than would otherwise have been the case. This led to the men in several districts during January only working about four days a week, without much prospect of a change for the better for some months to come. The demand for home coal, in particular for the London market, declined to such an extent that the prices of the best qualities delivered are now 3s. per ton lower than they were in December, and it is not improbable that before long there will be a still further reduction. The present year, however, is likely to see some important changes in connection with the London coal trade, which will be of considerable benefit to colliery proprietors, many of whom are now selling without any profit, but allowing the merchants to fix the charges to consumers without considering what they pay to the mineowners. In fact, there is no connection between the pit prices and the prices the consumers are compelled to pay.

But the question of coalowners selling to the metropolitan public without the intervention of the merchants or middle-men is now being warmly taken up by the mineowners in the county of Durham, and it is expected that many of them will before long follow the example of the Marquis of Londonderry, and become their own sellers direct to the consumers. It will then become an actual necessity for the inland colliery owners sending by railway to London, especially for Nottingham, Derbyshire, and the West Riding to adopt a similar course, and it need scarcely be said they will be

greatly benefited in so doing. It would most certainly result in greatly increasing the quantity of railway-borne going to the Metropolis, which has advantages over that carried by sea. This was pointed out in the evidence given before a select committee by Mr. Cockerell, the principal merchant connected with the London coal trade. He stated that "in the transport by sea from 12 to 16 per cent. of small coal is made, whilst only about one-half of that quantity is made in the transport by railway." He further stated that "the cost of carriage from the ship to the cellar by the consumer was as much in good times as 6s. per ton, whilst from the railway to the cellars would be 4s. 6d. per ton"—but the cost of the latter at the present time is not more than about 3s. 6d. per ton. Such being the case there certainly does not appear any reason why the London consumers should even now pay from 22s. to 24s. per ton for their coal, whilst the pit price for the same is only about one-third of those amounts, or from 7s. to 8s. per ton.

This state of things will continue, no doubt, so long as the metropolitan merchants hold the monopoly they have done, but there is now every reason to believe that the colliery owners before long will be the principals in the sale of coal to the consumers, which will be greatly to the advantage of the latter, as they will only have to pay one profit, and that a moderate one, to the actual producer. There will also be a healthy and legitimate competition between the owners of coal mines sending by rail and sea, which will be to the benefit of the public, and no doubt to the advantage of the inland colliery proprietors and their workmen as well. The position of the various lines as regards the traffic during the last three months will be seen by the following figures showing the tonnage carried by each line:—

	Tons—Nov.	Tons—Dec.	Tons—Jan.
Midland .....	214,897	219,238	186,091
London and North-Western	158,483	143,779	123,969
Great Western .....	88,908	118,864	84,703
Great Northern .....	95,776	101,674	104,783
Great Eastern .....	71,870	87,274	62,994
Other lines .....	7,101	7,313	7,135
	637,035	678,202	569,675

There was no marked falling off in the tonnage sent in January from Clay Cross and other collieries in Derbyshire, whilst considerably less was sent from Newton and Co.'s, and some other collieries in the South Yorkshire district.

#### REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Feb. 14.—The demand in the Coal Trade continues irregular, and the reports brought on to 'Change this week by the South Staffordshire coalmasters proper testified to the severity of competition from the Cannock Chase coalowners. These latter, whenever the call for domestic qualities is dull, as now, devote increased attention to supplies for the ironworks, and meet with considerable success. The out-turn being in excess of the demand at the present time, prices of fuel of all kinds continue unsatisfactory; and, certainly as to house coal, there does not appear to be much hope that prices will improve until the autumn. List prices for furnace and forge coal range from 10s. to 9s. per ton for the former, and in the Dudley district 8s. 6d. to 7s. 6d. for the latter. The fuel, which is here termed "forge coal" is, however, at this price amply good enough for mill purposes, and, indeed, is being used in the mills. Common forge coal is 7s. to 6s. 3d. per ton all over the district. Pig-iron is changing hands in limited lots, and those vendors are exceptional who are able to report, as did one agent upon 'Change this week, that his principals are sold forward for three months. These were the makers of a Derbyshire brand, for which 46s. 3d. was demanded. Northampton pigs were easy at 44s.; Staffordshire part-mines, 50s.; and cinder sorts, 40s. Orders in the manufactured iron trade are unevenly distributed, but the best steel makers keep busy. Marked bars remain at 8/ 2s. 6d. to 7/ 10s., and sheets (singles) 7/ 15s. upwards.

The 17th annual report of the South Staffordshire and East Worcestershire Institute of Mining Engineers states that the number of members now on the list is 179. The Council express satisfaction that through the instrumentality of the Institute a considerable sum was raised during last year, which aided the Mining Accident Fund over a difficulty; and that owing to the conferences with the authorities of Mason's College the splendid course of mining lectures were inaugurated. At the annual meeting of the Institute on Monday, at Dudley, the report was adopted, and Mr. A. Sopwith was elected President for the ensuing year. In his inaugural address Mr. Sopwith impressed upon the members that whilst new projects were worthy of discussion original papers on the trials and difficulties affecting mining engineering should not be neglected. Col. Beaumont, of Westminster, afterwards read a paper upon his rock-boring apparatus which did such good work in the Mersey Tunnel. It was decided to defer the discussion upon the paper.

The North Staffordshire Coal Trade continues unsatisfactory as the result of the lessened demand from the ironworks. Notwithstanding that production is less than formerly the supply of fuel upon the market keeps over-abundant. The demand for ironstone is in a decidedly better condition than that of coal, since the out-turn is very much smaller, and better prices are being realised. The pig trade remains quiet, and part-mines for which there is most demand are quoted at 45s. The finished ironworks are irregularly employed, and in the plate trade especially competition is severe. Ordinary plates are 7/ 12s. 6d. delivered Liverpool, and best ditto 8/ 10s. to 9/ 10s. Best "Crown" bars are 7/ 10s., and common are 6/ 10s. to 6/.

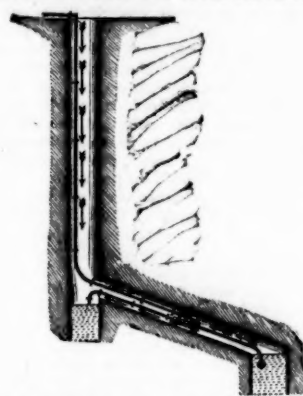
#### REPORT FROM LANCASHIRE.

Feb. 14.—The prospects of the Coal Trade in this district are of a very discouraging character. The winter season has brought none of the usual extra demand for house-fire coals, and requirements for general trade purposes have only been moderate, with a tendency to decrease rather than increase. The result has been that since the commencement of the year it is only in exceptional cases that pits have been kept on full time, and in the place of stores being cleared off they have been increased, whilst prices have been gradually giving way until round coal held in stock, which sellers are anxious to clear away, is to be bought at prices quite as low as those ruling during last summer. Some of the very best Arley coals still fetch 10s. per ton at the pit mouth, but for the lower classes of round coal it can scarcely be said that there is any really fixed price. Second qualities of Arley do not realise more than about 8s.; Pemberton four-foot coal, 7s. 6d. to 8s.; and common round coals, 6s. to 6s. 6d. per ton at the pit; engine fuel maintains a steady tone, but this is more because the present small quantity of round coal now being screened causes slack to be scarce than that there is any real activity in the demand. Burgies averages 4s. 6d. to 5s.; best slack, 3s. 9d. to 4s. 3d.; and good ordinary qualities about 3s. 3d. to 3s. 6d. per ton at the pit. Some of the pits in the Manchester district are being kept on full time, but in these cases a very considerable portion of the output is going into stock, and generally the average work done by the Lancashire collieries does not exceed four days a week.

In the Iron Trade there is a lull in the market following the tolerably heavy buying of last month, and all through business is quiet. Pig-iron makers, although tolerably well sold for the present, have no very favourable prospects before them. Finished iron makers, who have only been barely kept going since the commencement of the year, have no great weight of trade to look forward to, and in the engineering trade the activity which characterised last year's operations is rapidly disappearing, the work in hand, which is still keeping some of the leading firms busy, running out fast, with only a small weight of new business coming forward. The average prices at which business has been done during the past week are about 44s. 6d. to 45s., less 2s. for forge and foundry qualities of local and district brands of pig-iron delivered equal to Manchester, but the total weight of orders going out has not been large, the chief enquiries in the market being for long forward delivery, which makers at present hesitate to entertain. In finished iron only a hand-to-mouth trade is being done, at about 6/ per ton for good Lanca-

shire and North Staffordshire bars delivered into this district at the average basis of prices.

The application of water for mine purposes, such as the pumping of drainage from the mines, underground haulage, and winding, has of late been developed to a considerable extent, and it will be of interest to notice briefly this class of work, which is being supplied by Messrs. W. H. Bailey and Co., of Salford. Sir Hussey Vivian, M.P., was one of the first to introduce Messrs. Bailey's system into his mines in Sweden. He has since introduced it into South Wales, where he has a number of water motors for various purposes working with good effect. In this district one of the collieries owned by Messrs. Platt Brothers, of Oldham, has been recently supplied with a water motor, which develops 12-horse power for underground hauling, and by taking away the pump portion of the invention, and coupling up a connecting rod, these motors are utilised for blowing smiths' fires at the quarries of Penmanmawr. Messrs. Barclay have at present on hand a hydraulic motor winding-engine on Haag's system for a mine near Swansea, where the motor is to be used for sinking a shaft for raising both workmen and materials. There is a 220 ft. head of water in the rising main, and this head of water is being utilised to give a good 5-horse power by means of the motor, which is constructed to raise a total load of 1000 lbs. The construction of these motors may be briefly described as follows:—The pumping-engines are of the direct double-acting horizontal cylinder type, and the annexed engraving represents one of these motor pumping-engines at work in a Welsh mine. The valve of the cut-off is arranged in a



simple manner, so that at the end of the stroke a small jet of water forces a flat valve across the ports, and this is effected by means of a small oscillating piston. The winding-engine motors are of the oscillating cylinder type, usually known as piston-engines, in contradistinction to those water-engines having buckets, known as turbines or sometimes rotary engines. The ports for the inlets and outlets are in trunnions of large diameter: the pressure of the water coming in from ports underneath the trunnions has a tendency to lift them from their faces, and they are kept in position by means of solid blocks at the back of the trunnions, which enables the pressure to be put on in proportion to the column of water. These blocks can be replaced after considerable wear, or they can be adjusted exactly to requirements.

#### TRADE OF THE TYNE AND WEAR.

Feb. 14.—The Coal Trade, on the whole, continues fair for the season. The demand for steam coal for shipment good. The experiment lately tried to introduce the coal at various coal stations appears to have proved fairly successful. Other branches of the coal trade are not quite so brisk. The house coal trade is in the worst position at present, and colliery owners only receive a poor price for this coal shipped to the Thames, while the merchants there still keep the price up to the consumers. There is still a good deal of agitation respecting this question; but whether it will result in any decided action being taken on the part of the coal owners we cannot state at present. A severe subsidence of land has occurred at Brandon, near Durham, in the heart of the coke-making district, by which some buildings have been destroyed. This has been caused by colliery workings—an 8 ft. seam of coal having been worked out there 30 years ago. There are a number of pit-falls in the fields adjoining. The Coke Trade has been rather dull of late, but some progress has been made in making contracts for the supply of this important article of manufacture over the present year; and it is also expected that there will be large exports of coke during the next month.

The iron and steel manufacturers on the West coast, at Maryport, Whitehaven, &c., are still endeavouring to get the Durham coke at a cheaper rate; no doubt they are much pressed in the present state of the trade, and the low price of iron and steel, to reduce the cost of manufacture as much as possible. They have, however, lately brought charges against the North-Eastern Railway Company, which are not correct; they appear, indeed, still to throw the whole blame of the high charges they had to pay for the conveyance of coke on this company; but the fact is that considerable reductions have been made lately by this company, and the charges they now make are fair, but the coke has to pass over three railway systems before reaching the works, and two of these companies have not reduced their charges to any great extent. Those ironmasters have also commented on the profits realised by the North Eastern Railway Company, which are officially stated at upwards of 8 per cent. This statement is, however, misleading, as only a portion of the stock of this company is entitled to that amount of dividend. There is a number of different stocks in this great company, and the average dividend paid on the whole stock does not, we believe, exceed 5 per cent., therefore the ironmasters need not grudge that amount.

The Iron Trade continues quiet; until the furnaces are blown out there will not be much change in the value of pig-iron; some makers, however, wish to raise the price up to 40s. immediately. It is, however, possible at present to buy the iron at 37s. per ton for the next three months. The shipments of pig metal are improving. The competition for orders in the steel rail trade is very keen; local firms now quote 4/ 10s. The manufactured iron trade continues extremely dull, with falling prices. The iron shipping trade continues to decline, and as ships are completed on the Tees the hands are discharged. A similar course to some extent is also pursued on the Tyne and Wear, and this will, no doubt, go on until a substantial reduction is made in the rate of wages. There is little change in the amount of iron in Messrs. Connal's stores. The shipments of pig-iron for the week amounted to 17,300 tons. The coal and coke trades are unchanged at Middlesbrough. It is expected that some important changes in the American import tariff will be introduced shortly, and if these alterations come up to present expectations they will have an important effect on various branches of trade in this locality. It is expected that the iron and steel trades, the chemical trade, and possibly the coal trade, will be benefited thereby.

The Chemical Trade continues to improve, the great advance in the value of the produce in this trade has placed these works on a much improved position. The annual report of the Newcastle Chemical Works Company has been presented, from which it appears that the nominal capital has been reduced from 510,000l. to 240,000l. The financial position of the company has been greatly improved. The manufacturing account shows a profit of 20,000l. A mechanical decomposing furnace is now at work, and two others are in course of construction. It is to be regretted that the attempt made by this company to find salt at the mouth of the Tees has proved unsuccessful, 5190l. 15s. 3d. has been expended in boring, &c., but the salt bed has not been found. It is thus clearly shown that this bed does not extend so far as was expected, and the opinion is now held that the value of this bed will fall far short of what was anticipated. The first iron ship built at the new yard of Messrs. Macintyre and Co., at Hebburn, has been launched, and three other



vessels are being constructed there. The iron shipbuilders on the Wear have offered to accept a reduction of 10 per cent. on their wages. The marine, locomotive, and general engineering trades here continue to be well employed. At Messrs. Hawks and Co., Gateshead, a considerable amount of iron bridge work is on hand. The other extensive iron and engine works in Gateshead, including the extensive erecting and repairing works of the North-Eastern Railway Company, are well employed at present.

The price of lead continues very low, and lead mining in West Durham continues much depressed in consequence. On the Allen some of the men employed by Mr. Beaumont have received notice that they will not be required two months hence. At Allendale Mills there is a large quantity of lead ready for sale. A company has been registered to acquire and work the Rowleyhead Mine, at Rowleyhead, in Hexhamshire.

#### TRADE IN SOUTH WALES.

Feb. 14.—The shipments of coal at Cardiff in the month of January were 620,130 tons foreign and 75,625 coastwise; Newport, 148,828, tons foreign and 69,705 coastwise; Swansea, 73,075 tons foreign, and 56,595 coastwise; Llanelly, 5500 tons foreign and 5732 coastwise. Last week Cardiff sent away 144,983 tons foreign, and 21,042 coastwise; Newport, 32,146 tons foreign, and 18,299 coastwise; Swansea, 18,138 tons foreign, and about 13,000 tons coastwise. The patent fuel trade is good, but the house coal trade is not active. Steam coal ranges from 10s. 3d. to 12s. 6d., according to quality. House coal may be had at from 10s. 3d. to 10s. 6d. The coal shipments at Penarth Dock last week exceeded the highest quantity ever shipped in one week since the dock has been opened by 2688 tons, the total quantity being 53,889 tons. The dredging operations for the removal of the earthwork between the dock and the extension has commenced, and a channel will shortly be made through, when vessels will be loaded at the new tips, and it is expected that the shipping capacity of the dock will be 70,000 tons per week. The house coal trade around Bargoed and Deri continues very good, and the works are going on very regularly. Higher up the valley the steam coal trade is also very good, and, taking everything into consideration, matters are in a very satisfactory state; very friendly relations exist between the employers and employed, and times are better here than they have been for the past nine years. The coke trade still remains steady, and prices quiet. There are several rumours about new pits being sunk in these parts next spring. Sinking operations at the Elliot New Pit, near Cwmynog, which is being sunk by the Powell Duffryn Steam Coal Company, are being pushed on vigorously, and will eventually give employment to a very large number of workmen. The above company have been in treaty about renting the houses at Pengam and Fluor-de-Lis, with a view of providing house accommodation for the workmen and their families. It is also intended to run cheap workmen's trains morning and evening to and from Fluor-de-Lis and New Tredegar.

The shipments of iron in the month of January at Cardiff amounted to 2308 tons; Newport, 7544; Swansea, 475; Cardiff sent away last week 1219 tons. The arrivals of iron ore are very large, Cardiff having received 10,280 tons from Bilbao, and 4479 from other places; Newport, 15,890 tons from Bilbao, and 7245 tons from other places. *Prices keep very low.*

Although the tin-plate works are in full swing, very few new orders are accepted. Stocks now in this country only amount to 150,000 boxes, so that when the spring orders arrive we may expect to see a rapid movement upward in prices, and increased activity. IC cokes are only quoted at 15s. to 15s. 3d. Mr. P. W. Flowers's suggestion is a very commendable one for shipping the 4,000,000 boxes produced annually by the West Glamorgan and Carmarthenshire works, and very shortly not only the Great Western line of steamships must add to their number, but the Liverpool steamships will also call for cargoes, seeing that Swansea has advanced the shipments of tin during the last four years from 68,182 boxes in 1880 up to 779,778 boxes in 1882.

#### REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Feb. 13.—The recent storm has played sad havoc with mine buildings erected in exposed situations. At the Braich-y-Oen Copper Mine, on the sides of Snowdon, it carried away the smiths' shop and dressing-floors, scattering the materials in all directions. At this mine, which is worked privately, there is a fine course of ore, copper, lead, and blende, of considerable width and length already proved.

The mines of the whole of this district which made a profit last year are few, consisting of Great Holway, Flintshire; Minera, Denbighshire; Roman Gravel, Salop; and Lisburne, Cardiganshire. At one important mine which recently sold lead ore at 7l. a ton, I am assured the actual cost, including everything amounted to 6l. 17s. 6d. In Shropshire perhaps the most important explorations are those carried on at the South Roman Gravel Mine, where a deep adit is being driven, which is intended to cut the great Roman lode, and a new shaft is being sunk some 300 yards from the southern end of the working on that lode in the Roman Gravel Mine.

There are signs of improvement in the slate trade, and the large stocks which had accumulated at some of the quarries are being rapidly cleared off. Through the lamented deaths of the Messrs. Hayward, father and son, which took place recently at Carvarvon, the Cilgwyn Slate Quarry, Nantlle, is to be sold, as announced in the Journal. Next to the Penrhyn and Llanberis, the Cilgwyn has for many years been the largest and most successful quarry in Carnarvonshire. Several new and promising slate quarries are being developed in this county by local energy and means.

In the Coal Trade the men have wisely resolved not to press their demand for an increase of wages at present, but only to endeavour to strengthen their position by uniting themselves with the Lancashire Federation of Miners. The owners have intimated that the price of coal is still so low that it would be impossible to accede to any demand for an increase of wages. A case is proceeding in the Wrexham Magistrates' Court, in which Mr. Hall, Her Majesty's Inspector of Mines, prosecutes the Bersham Colliery Company for an infringement of the Mines Act in not providing sufficient ventilation. The case is exciting considerable interest among mining engineers, and considerable rebutting evidence has been given. The case has been twice adjourned. At the Hawarden Colliery, on Thursday, a miner was badly crushed by a fall of roof. In railway matters the Great Western dividend is 7½ per cent., as against 7½ last year. A slight decrease has taken place in the Cambrian traffic returns, resulting, doubtless, from the depression in mining industries. The Mid-Wales Company approve of a Bill, which is before Parliament, for providing communication between their line and Monmouth by means of an extension of the Golden Valley line in Herefordshire. The Whitchurch and Nantwich Junction has been abandoned. In their report the engineers of the Mersey Tunnel express the hope that the Tunnel will be ready for traffic by the end of the present year. Mr. Van Tromp, who for many years has been the district goods superintendent of the Great Western Railway, died at Shrewsbury, last week, at the age of 58. In the course of his duties Mr. Tromp had much to do with mine, quarry, and colliery owners, by all of whom he was much respected. The barge, or flatmen, of Runcorn, have struck work in consequence of a reduction made by the barge-owners of ¼d. per ton of the amount paid as tonnage. The men are paid a small fixed wage, which is supplemented by tonnage thus:—A captain gets 15s. per week, which with tonnage is brought up to 2l. An ordinary man is paid 11s. per week, and his tonnage usually amounts to 16s. in addition. The ironworks keep employed, but there is no improvement in prices.

ARKANSAS AND TEXAS.—Under the title of Plain Facts about Arkansas and Texas, Messrs. Rand, McNally, and Co., of Chicago, have just issued a pamphlet which will prove of paramount interest to intending emigrants. The comparative areas of improved, uncultivated, cultivated, and timber-land, crops, population, commerce, religion, railroads, &c., of each State and the progress during a series of years are carefully shown in figures fully explained in the text, and the relative magnitude is graphically shown by the

introduction of beautifully executed coloured diagrams, from which the relation of one series of figures to another can be seen at a glance.

#### SPONTANEOUS COMBUSTION IN COLLIERIES—No. I.

The interesting article of Mr. Durand on this subject has been translated and abstracted from the Bulletin de la Société de l'Industrie Minérale, by Mr. Alfred Bache, B.A., A.I.C.E., and published in the "Other Selected Papers" of the Institution of Civil Engineers, edited by Mr. James Forrest. It is stated that the primary causes of fires breaking out in collieries where the coal is contaminated with pyrites are believed by the author, who is engineer of the Doyet Collieries (it will be borne in mind that in many of the collieries in the Midland and other coal fields of France the seams are not only of great thickness, sometimes even more than 20 yards, but are also inclined at steep angles, sometimes nearly vertical), in the Department of Allier, France, to be the three following:—Oxidation of pyrites, friction from shippings, and warmth of air current. Experiments made by Mr. Fayol have shown that aboveground a heap of Comenry small coal, presenting to the air a surface of not more than about 1½ square yard per cubic yard, will, if once it gets heated to a temperature that lies somewhere between 140° and 212° Fahr., go on heating more and more till at length it takes fire. Pyrites met with in coal seams is either amorphous or crystalline, and occurs in the shape of nodules, flakes, bunches, or veins, while sometimes it is so finely disseminated throughout the coal as to be invisible. In dry air and at low temperatures it does not oxidise; but its dissemination through coal or shale gives it a more porous character than appertains to it by itself, and in almost all cases it oxidises in moist air, and becomes converted into sulphate of iron, the excess of sulphur being set free. The heat developed by the oxidation is further augmented, where there is sufficient moisture present, by the subsequent conversion of the sulphate of iron into hyposulphate, with liberation of sulphuric acid, which, when mixed with one quarter its weight of water, rises to the temperature of 220° Fahr. Various other chemical actions also conduce to the development of heat, while there is no absorption of heat by the formation of any gas during the oxidation of the pyrites. At Doyet Collieries the roof over the thick seam of coal is composed in some places of fine shaly sandstone containing pyrites, and near the outcrop, where cracks have occurred in the roof, the moisture from the surface and the air from the mine penetrating into them have caused the roof to get red hot, and to set fire sometimes to the timber props. A mere bunch of pyrites, however small, occurring either in the coal itself or in a shale parting, is quite sufficient to serve as a lucifer match for starting a conflagration. The sulphur liberated by decomposition of pyrites burns at 480° Fahr., and any sulpho-carbons which may also be formed burn at about 660° Fahr., whilst the hydro-carbons of coal will not burn below 930° Fahr. at least. Hence pyrites, as furnishing the most inflammable products, is really what gives the start to a fire.

Where pillars of coal become cracked and crushed under the pressure of the roof, shippings occur, producing considerable friction, which develops corresponding heat, and as the surfaces sliding past each other are uneven, the friction and heat are concentrated upon the prominences in contact. The heat thus becomes sufficient not merely to accelerate the action of pyrites, but possibly to ignite coal seemingly free from pyrites, even anthracite hard to burn. In the open working at the outcrop at Doyet the coal has been set on fire by a sudden slip of the ground above. An air current that was warmed by uncondensed steam discharged from an underground engine at Doyet caused a little small coal, which had accumulated against some timbering, to get so hot that the timber took fire after the engine had been at work rather more than three months. In return air drifts the crushed coal in the roof is particularly liable to heat under the influence of the warm and moist current.

In seams free from pyrites the author believes oxidation of the hydro-carbons on exposure to air cannot develop heat enough to ignite the coal; and the only way in which he can account for spontaneous combustion in such coal is by the presence of dust or fine slack in the midst of any heaps that are found to be heating. Dust and fine slack he considers capable of exerting a condensing power upon the combustible gases that are ready to escape from bituminous or gaseous coal, and also upon the oxygen of the air, and the heat so developed may become sufficient to fire the gas, and thereby the coal. While, therefore, spontaneous combustion may occur in any colliery, whether the coal contains pyrites or not, it is more particularly in seams of caking coal containing pyrites that as the workings progress the pillars left standing grow hot rapidly under the combined action of oxidation of pyrites, pressure and subsidence of roof, and oxidation of hydro-carbons through condensing power of dust. It is the pyrites, however, which, wherever present in any appreciable quantity, plays the principal part in starting ignition, and thus constitutes the primary cause of fire; the other causes are then but secondary, although they may so far supplement the start thus given as to make a seam containing but little pyrites appear readier to fire than one containing much more.

The development of spontaneous combustion is considered by the author firstly in the case of masses of coal, such as pillars left in working. Really solid pillars never fire; those that do are always fissured with numerous cracks, and are more or less crushed. Outbreaks of fire are encouraged by the presence of any coal crushed small, which in its finely subdivided state promotes the chemical actions that induce heating. Fire first smoulders at the bottom of the innumerable cracks by which the pillars have become fissured under the crushing load they have to support; then the walls of the cracks get red hot and burn, sometimes bursting suddenly into flame where the previous heating has covered them with bituminous matter. The tarry smell thus occasioned often betrays the existence of fire before it has become visible; and so difficult is it to find its actual seat that often it is not discovered until it has crept outwards towards the air current at the mouth of the chinks, and has ignited the crushed coal behind the timbering of the roads, and then the timbering itself. The danger is augmented wherever there are timbered excavations overhead, and still more wherever a timbered drift has been pushed forwards under a mass of crushed coal overhead. Through such a mass air circulates easily, heat and moisture collect there, and fire breaks out quicker than where the overhead coal has been got out previously.

Wherever crushed coal can be harboured on or amongst the rubbish that is packed into the goaf, fire is sure sooner or later to break out. It begins at some distance in from the roads, and creeps out gradually towards them, igniting on the way any timber that may have been left buried in the gob-packing; the pungent wood-smoke gives immediate warning of the fire. Pillars purposely left unworked, either for maintaining a shaft or because the coal in them is not good enough, are also liable to take fire. The load bears unevenly around them, they crush and crack under it, and small crushed coal accumulates next to the gob-packing; the heavier the pressure the sooner do the pillars heat and fire. Similar circumstances occur where a nip in the seam stops the getting of coal. Where the goaf is not packed with rubbish, but the ground is left to fall in, there is certain to be fire if any crushed coal is left behind. The danger is liable to be enhanced by accumulation of explosive gas in the large cavities; as is the case also wherever cavities result from settlement of rubbish packed in the goaf.

As to collieries being set on fire from a lamp or an explosion of fire-damp, the author considers this can only occur where the mass so ignited has got very hot beforehand, and is ready to catch fire in a moment. An explosion, moreover, throws down a lot of coal that will easily take fire, besides shaking and splitting the pillars, and so rendering them more ready to ignite. Hard seams of caking coal, containing much gas and pyrites, are the most liable to spontaneous combustion. In very fiery seams the author has noticed that heating occurs generally in the dampest places, or along return air-ways when the air is warm and moist. Where a pillar of bad coal had stood without heating for seven years at the foot of an incline in a current of fresh air from the downcast shaft, an alteration in the ventilation exposed it to the return current of warm moist air, and it then got so hot in two months as to necessitate its speedy removal; by the time it could be worked it was already too hot to touch in some places.

The nature of the roof tells variably. In some collieries fire is found to break out more readily under a roof of tender shale than under one of thick hard sandstone. At Doyet, on the contrary, the thick sandstone roof, settling unevenly after the workings, leaves roof cavities, in which air circulates and encourages heating, while in places where a ceiling of shale separates the coal from the thick sandstone the shale falls, and no dangerous cavities are left. Coal or rubbish tipped in heaps aboveground from the pitmouth is liable to heat and fire by oxidation under the action of the air and wet, wherever the smaller stuff that collects at the top of the heap is combustible enough. The fire breaks out first a little below the top on the side most exposed to the wind, and spreads thence throughout the entire tip. It is sometimes started direct from the braziers burning at the pitmouth to light the landing of the cages; the tip then ignites first at the top, whence the fire spreads downwards and laterally.

#### PHOSPHORITE.

Phosphorite as a mineral was little understood until a demand arose for chemical manures when the value of this substance for the manufacture of super-phosphates made it manifest. As a mineral it may be described as a massive variety of apatite or native phosphate of lime, containing more fluorine than the crystallised varieties, analysis showing that apatite is composed of 55.75 lime and 44.25 phosphoric acid, hence known as phosphates of lime. Apatites are of various colours, very deceptive in appearance, and are often mistaken for other minerals, hence their name from the Greek word "apate," deceptive. The manufacture of super-phosphates has become a very great industry, especially in Germany, and the demand for phosphorite for this purpose very greatly exceeds the supply, and trade has lately received a still greater impetus from the fact that it is said to be the only manure that acts successfully in arresting the vine blight which has existed to such an extent for the last few years.

Large deposits of phosphorite have been found to exist in the neighbourhood of Limburg at the foot of the Sarsbach Mountains and already about 150 to 200 shafts have been sunk there. Several companies are working in the district, the most important of which is the Société Belge et Allemande des Phosphates, who raise at present from 40 to 50 tons per diem, which finds a ready sale at from 51s. to 60s. per ton. We believe the whole of this is at present sent to Cologne for manipulation, but the Société contemplates the erection of extensive works so as to treat the material on the spot. Pit timber is abundant and cheap, and the undertaking is said to be the most successful, yielding large profits to those interested.

The phosphorite in some places is massive, in others interspersed with clay, the ground being intersected by dykes of trap, but in all cases the mineral is found overlying a substratum of limestone; in the neighbourhood of Heckholzhausen near a large eruption of basalt 17 ft. from the surface was found some phosphorite boulders of about 4½ lbs. weight each, which yielded on an analysis 84 per cent. of phosphoric acid; the average of phosphoric acid contained in the phosphorite in the entire district is given by Dr. Egger, and other German chemists to be as high as 31 per cent.

The neighbourhood has been prospected to a great extent, and large deposits found to exist at Steinbach, Hintermeilingen, Schupbach, Wirbelau, Offenheim, Heckholzhausen, Gaudenberg, and many other places which lie within a radius of about six English miles, and are attracting a large amount of attention, and the ground is rapidly rising in value. A railway for which a concession has already been obtained will pass through the district, at present the nearest station is at Ründell, five English miles distant from the village of Heckholzhausen, which is nearest to the present workings; the River Lahn offers, however, a ready means of transport to the Rhine, and phosphorite can now be transported by water to Rotterdam for 5s. a ton; of course in a new district like this it is hardly to be expected that the mining should be carried on in as scientific a manner as could be desired; the timbering is defective, and where difficulties are encountered the miners abandon the pits, and open fresh ones; this will be remedied in time, the phosphorite lie at shallow depths no expensive machinery is required, labour is cheap, and if the demand for super-phosphates continue (which cannot be doubted) those who have concessions are tolerably sure of a large return for their outlay.

Large deposits of iron and manganese are found in the district, and Krupp has works not far distant; black marble is worked in the mountains, and coal can be procured in Limburg at a low figure.

SOUTH STAFFORDSHIRE AND EAST WORCESTERSHIRE INSTITUTE OF MINING ENGINEERS.—The members may fairly be congratulated upon the prosperous condition which the report and accounts presented at the seventeenth annual meeting, held on Monday, exhibited. The number of members is increasing; there is a good balance in hand, and there are excellent assets. The result of the election for the current year showed:—Mr. A. Sopwith, President; Mr. John Brown, vice-President; Mr. B. Latham, treasurer; and Mr. Alex. Smith, hon. secretary.—Mr. Sopwith returned thanks for his election, and then delivered his inaugural address. After alluding to the good work done by the Institute, he suggested that whilst new projects and inventions were worthy of discussion, original papers on the trials and difficulties affecting mining engineering should not be neglected. Among these were ventilation, methods of working, lighting of collieries, surveying, descriptions of coal fields, underground haulage, &c. As to the mining lectures at Birmingham, he was glad to say that the Institute had always taken great interest in them, and continued to do so. Scientific training could now be received at the Mason College, and the result would be extremely beneficial to younger members of the profession.—A hearty vote of thanks was passed to the late President and the other retiring officers and Council members. Colonel Beaumont (Westminster) delivered an address on his rock-boring apparatus, which has worked with such success in the Channel and Mersey tunnels. Among the exhibits of the day were Mr. S. Woodall's "Windmill" portable railway; exhaust-steam injectors, by Mr. Saville, Manchester; Mr. Jonah Davies gave his experience; Mr. C. H. Treglown exhibited a model of Messrs. Tangye's improved direct-acting and centrifugal pumping-engines combined on one bed. The Marsaut patent lamps, improved dials, levels, anemometers, telephones, &c., by Messrs. J. Davis and Son, of Derby, were also exhibited.

CONDITIONAL ALLOTMENTS.—The condition that "no allotment shall be made unless the full amount asked for be subscribed" is one which affords great protection to investors, since it affords them the guarantee that if the money is unprofitably employed they will only have to bear the loss in proportion to the amount subscribed for; and the case of the White Cliff Lead Mining Company against a shareholder heard at the Birmingham County Court this week, proves that, where the number is made up by officers of the company such officers will be compelled to pay upon the shares like any other shareholders. The company in question was formed in 1876, and purchased some leasehold and freehold interest in certain mines situated at Llanrwst and Bettws-y-Coed. In 1878, in consequence of want of capital, the company were unable sufficiently to develop the mines, and they determined to raise fresh capital. The defendant applied for 10 of the 1000 new shares which it was decided to issue, and 740 out of the 1000 new shares were allotted to independent people; but the remaining 260 were allotted to the secretary of the company. The defendant paid 20l. on account of the calls in respect to the shares, and they now sought to compel him to pay the calls made on Feb. 7 and May 21. Arthur Cleveland Cox, formerly secretary to the company (which is now being wound up), said the money for the 260 shares, which were allotted to him had been paid by the directors out of their own pockets, and not out of the coffers of the company. He was subjected to a long cross-examination by Mr. Rowlands, who sought to show that the plaintiffs did not perform their part of the contract—that no allotment would be made until the number of applicants for shares was sufficient to take up the 1000. Mr. Cox stated that the 260 shares allotted to him were not mentioned in any balance-sheet issued until May, 1882. He believed they were



inserted in the balance-sheet for May, 1882, because the attention of the directors was drawn to the fact of their previous omission. He had paid for the shares in full. Witness could not say whether he had made a written application for the 260 shares; his impression was that he had not, but he was present at the meeting when they were allotted to him. He signed the contract, which every shareholder had to sign for registration at the Joint-Stock company's office. It was a contract rendered necessary by the shares being issued below par. He paid the balance due on the shares in March, 1883—121*l.* 15*s.* He got that money from Mr. Baker, one of the directors. He had no knowledge that that came out of the coffers of the company; he believed it was Mr. Baker's own money. The directors passed a resolution in January, 1881, rescinding the allotment of the 260 shares to him, but they afterwards found that they had no power to do so, and the resolution was recalled. At the close of the examination of the witness Mr. Rowlands addressed the Court for the defence; and his Honour gave a verdict for the plaintiffs for the amount claimed, holding that Mr. Cox, having signed the contract, made himself personally liable for the shares.

**KING'S SAFETY HOOKS.**—At the Derby Winter Assizes, just concluded, the case of King v. Oliver and Company was heard at Nisi Prius with a special jury. The plaintiff, Mr. John King, of Pinxton, was the patentee in 1867 of an invention for a detaching hook used at colliery shafts to prevent the consequences of over-winding. The plaintiff desired to make his invention known among colliery proprietors, and he employed Mr. Stephen Humble, mining engineer, of Derby, to act as his agent. That patent had expired, and had nothing to do with the action; but in 1879 plaintiff patented another invention of a similar character. He entered into partnership with Mr. Humble, the latter paying 100*l.* to plaintiff, being half the expense incurred in obtaining the patent, and it was arranged that Humble was to have half the profits arising out of the sale of the invention. It was further stipulated that Humble should do his best to sell both the inventions, that he should pay a royalty of 1*l.* upon the patent still in force, and that, upon the expiration of the 1879 patent, in March, 1882, Humble should pay one-half the renewing fee. Upon Humble failing in any of these particulars the agreement was to cease. Between 1879 and 1881 Humble paid plaintiff 310*l.* 12*s.* for royalties, but after the old patent had expired plaintiff was alleged to have discovered that Humble had pushed its sale in preference to the patent still continuing in force. In 1882 application was made to him to pay 25*l.*, being half of the expense of renewing the 1879 patent. Humble did not pay, and plaintiff had to pay the whole sum himself. Thereupon the plaintiff went to Messrs. Oliver and Company, the defendants in the present action, and to Messrs. Abell and Company, of Derby, the two firms who were making the hooks for Humble. He told them they must discontinue making the hooks, as the agreement between him and Humble was at an end. In January, 1883, Humble failed, and Mr. Belfield, accountant, of Derby, who was appointed trustee, believing that Humble's interest had not been extinguished, sold his supposed share in the patent for 25*l.* to Messrs. Oliver and Company, who had since continued to make and sell the hooks. Plaintiff's contention was, that the sale by Humble's trustee to defendants was void by reason of the failure of Humble in his agreement with plaintiff.

Mr. Stephen Humble was called for the plaintiff, and he admitted that after 1881 he never attempted to push the 1879 hook. In cross-examination witness said he never presented a book to Mr. Oliver showing that a balance had been struck with King. Since July King and witness had been working together again under a fresh agreement. In re-examination witness was asked about his failure, and he replied that he had paid nearly the whole of his creditors in full. Mr. Oliver, the managing director of Oliver and Co., William Cooper Furness, secretary to the defendants' company, and J. Macdonald, engineer for the company, gave evidence. The latter said he was acquainted with the inventions of 1879 and 1882. The patent of 1882 was an extension of the principle of the one of 1879. This being the whole of the evidence for the defence, Mr. Lawrence submitted that an agreement transferring patent rights, as in this case, must be registered, and there was no proof of registration of the agreement of 1879 between King and Humble. Counsel having again addressed the jury, the Judge summed up the evidence, and said this was a somewhat complicated case, but there were three points upon which counsel agreed should be submitted to the jury:—1. Whether a sum of 26*l.* 1*s.* found entered in the books of Humble and King was paid or allowed on account of the agreement mentioned. 2. Did Humble use his best endeavours in obtaining orders for hooks in accordance with the agreement of October, 1879. 3. Whether the invention of 1882 (that was the new patent) was an extension or modification of the patents of 1867 or 1879, or of any matter or detail contained or involved, or was it an independent new invention. His Lordship incidentally alluded to the difficulty of patent law, and said there was no more intricate question than what was for the Court and what for the jury to decide. The jury found that the money (26*l.* 1*s.*) was not paid in fulfilment of the agreement; secondly, that Humble did not use his best endeavours; and, thirdly, that this was a new invention simply added to the old patent, and not an extension or modification. The Judge gave judgment for plaintiff with costs, but on the application of Mr. Mellor stayed execution until a motion for a rule can be heard.

**HUBBARD'S NEWSPAPER AND BANK DIRECTORY.**—In a work of the nature of a directory the general accuracy can only be judged of by the testing of particular cases and estimated by this standard the only conclusion that can be arrived at is that the work bearing the above title—London: Trübner and Co., Ludgate Hill—is inaccurate and misleading in every particular. Taking only the London newspapers there are almost innumerable inaccuracies even in the descriptions of the subjects to which the papers are devoted and as to the field of circulation. The date of establishment is, however, often correct. The stated circulation is in almost every instance absolutely and indisputably false; the falsehoods being of two classes which may be thus regarded. Where the figures are marked with a star they represent intentional misstatements for which the publisher of the Directory is not to be held responsible, whilst those without the star are errors through crass ignorance on the part of the publisher. It would be invidious to mention names of papers, whose circulation is overstated, but it may be affirmed that one on page 1645 with a stated circulation of 10,000 had once during its career a claim to about half that number, and might now be more accurately stated in hundreds than in thousands; the same remark would apply with almost equal truth to starred, 8000, 20,000, 50,000 on page 1641. The *Mining Journal* circulation is stated at 1500, a mere fraction of the truth at any time since 1838 (unless Mr. Hubbard means the figure to represent the circulation in the New World); and the *Mining World* is stated at 1200, almost equally fractional; Public Opinion is set down at 6000, although for the last 20 years it has never been lower than 17000, and in many years recently has averaged many thousands above that number. Then Engineer and Engineering, whose circulation is not widely different from each other are put down, one at 2000 and the other starred 9000. These absurdities might be continued indefinitely, but the few mentioned will suffice to caution anyone against expecting accuracy in the volume and demonstrate its utter uselessness and non-reliability.

**WEST KITTY.**—The report from the manager, Capt. Vivian received at the offices of the company this week, represents the value of the points in operation to have increased considerably as compared with the previous report. This mine, writes a correspondent, as will be patent to any careful student of the weekly reports published in the *Mining Journal*, is steadily increasing in value. More-over the tin is produced at the exceptionally low cost of 25*l.* per ton, and the property now appears also to be raising copper of a good quality in addition. Taking the above facts (I have my information from the best sources) into consideration, I respectfully submit that it is, to say the least, one of the anomalies of the present times that the shares should be standing at their present price.

**WHEEL COATES.**—It is cheering to find this long depressed property has made a move in the right direction, there being no call required at the general meeting on Tuesday next, and shares have sprung up in demand with a rise of about 5*s.* per share within the last few days, and probability of a rapid further advance. They should be considered cheap at 20*s.* per share for copper alone, having such a fine lode at the 80, the deepest point, and the expectation of quickly cutting the West Kitty flat tin lode, while plant is upon the property equal to all the requirements of a large mine, and could not have cost so small a sum as 10,000*l.* is altogether satisfactory.

**TREGBEMO MINING COMPANY.**—At the meeting of this company held yesterday the accounts showed a debit balance of 4905*l.* During the last few days a good many of the shares have been relinquished, and under these circumstances it was thought better that the company should be wound-up voluntarily. Resolutions to this effect were accordingly passed.

**POLBERRO, ST. AGNES.**—The reports of Capts. Vivian, of West Kitty; Bennetts, of Penhalls; and Davey, of Penstruthal, have been received, and can be inspected at the offices of the company, Walbrook. The agents go very much into detail, and are agreed in recommending the sinking of Turnavore shaft to intersect the Wheel Pink lode, which has given in the adjoining mine 100,000*l.* profit. The shares are quoted 1 to 1*1*/<sub>2</sub>. It is also stated that some levels in

Penhalls on this extraordinary course of ore are close up to Polberro boundary.

#### PRACTICAL MINING—VALUATION OF COPPER ORE, AND PAYMENT OF TRIBUTERS.—No. III.

But it is not alone for the calculation of the value of tributers' ores in a market parcel that the system of working from the *real standard* is preferable to the common method. It frequently happens that miners who are not conveniently situated for selling their ores at the public ticketings arrange with a purchaser to buy all the ore they raise within a certain period—three months, six months, or twelve months as the case may be—at a price to be fixed according to the quotations for Tough Cake Copper published in the *Mining Journal* on the Saturday following the day of sale. In such cases much trouble and many disputes would be saved by the parties agreeing to consider a fixed amount *below* the market quotation for the metal as the *real standard*. This deduction would represent the smelter's profit, and might be 2*l.* or any other sum that might be determined upon. Thus, assuming the agreed deduction to be 5*l.*, and the market quotation for Tough Cake Copper on the Saturday following the sale, 78*l.* 10*s.*, the *real standard* would be 73*l.* 10*s.*, and if we deduct from this *real standard* the smelting costs, as shown in Table A, we can ascertain the price per ton of "copper in the ore" to be paid for ore of any given produce. The mode of procedure is of course identical with that which we have already described in referring to tributers' ores mixed in a market parcel. As a guide for fixing the deduction to be made from the market quotation for Tough Cake Copper to find the *real standard* we may mention that, in cases which have come to our knowledge, the terms arranged between the miners and the purchasers would represent a deduction of from 10*s.* to 3*l.* 5*s.* Usually all the ores from one mine are purchased upon the same terms; but we know that in one instance carbonate ores and pyrites ores were distinguished, and special terms made for each; this, however, would necessarily be a matter for arrangement between the parties; no general rule could be given. It will be observed that this is really returning to the system of purchasing copper ores adopted a century ago, at which time the average standard (which has now lost its meaning and value because, owing to the improvements in copper smelting, &c., ores of all products can now be sent to market, and the returning charges vary with the produce) would have been identical with the *real standard*.

Before proceeding further we will explain the manner in which the value of each tributer's ore was obtained from the "fine copper," and the price per ton of "copper in the ore." In the first place we must know how to express shillings, pence, and farthings as the decimal fraction of 1*l.* sterling. This is extremely simple. The first decimal place represents florins and the third decimal place corresponds to farthings, but for greater accuracy we remember that .025 (instead of .024) is equal to sixpence; so that .125 would be the fraction for 1 florin and 1 sixpence, or for 2*s.* 6*d.* Again, 0.75 is equal to 2 florins and 3 sixpences—that is, 5*s.* 6*d.*, and so on. For amounts less than 6*d.* we add or subtract the number of farthings as may be most convenient; thus 6*s.* 7*d.* we should read 3 florins 1 sixpence and 7 farthings—that is, .325 plus .007 = .332. But 7*s.* 10*d.* we should read 8 florins—that is, .800 minus 7 farthings—that is, .007 = .793. By the converse process the decimal fraction of 1*l.* is expressed as shillings, pence, and farthings with equal rapidity; so that .834 reads 8 florins 1 sixpence and 9 farthings, or 16*s.* 8*d.* To the uninitiated it may appear a formidable task to calculate the value of 1.5518 tons of ore at 63*l.* 1*s.* 7*d.*, or of .6686 tons at 62*l.* 5*s.* 9*d.*, yet knowing the rule and manipulating shillings, pence, and farthings as a decimal fraction of 1*l.* we encounter no difficulty whatever. We can, moreover, by dealing with the money decimally in conjunction with another table calculate the value of any given quantity of any material whatever at any given price. Thus—

1.5518	62.290
63.080	.6686
1241440	373740
46554	498320
93108	373740
97.887,5440	373740
	41.647,0940

Here we simply multiply together the quantity of fine copper and the price, calculating the fractional parts of the pound in the price, as already explained. In the product, commencing from the right hand, we point off seven figures, because there are seven decimal places in the multiplicand and in the multiplier combined. Taking the first three decimals only (and applying the rule already given as to the last figure retained) we have 97.888*l.* and 41.647*l.* respectively. Then again reconvert the fraction as directed for the value of these fractional parts we find the amounts to be 97*l.* 17*s.* 9*d.* and 41*l.* 12*s.* 11*d.* As the decimals in the product beyond the third place only represent minute fractions of one farthing it is unnecessary to take them into consideration. This process is embodied in the following rules:—

**TO ASCERTAIN THE VALUE OF ANY QUANTITY OF COPPER OR OTHER MATERIALS (sold by the ton of 20 cwt.) AT ANY GIVEN PRICE.**—Rule: Multiply the quantity by the price, taking Table C for the fractional parts of a ton, and calculating mentally the fractional part of a pound sterling.

*Examples:* 1.—What is the value of an iron casting which weighs 2 tons 3 cwt. 1 qr. at 5*l.* 8*s.* 4*d.* per ton? 2.—What is the value of 23 lbs. of ingot copper at 95*l.* 10*s.* per ton? 3.—What will 56 tons 7 cwt. 2 qrs. of coal cost at 8*s.* 5*d.* per ton?

To answer these questions we write 2.1625 (using Table C) for 2 tons 3 cwt. 1 qr., and 5.416 for 5*l.* 8*s.* 4*d.* Then multiplying 2.1625 by 5.416 we get 11.712*l.*, which with the assistance of Table G we find to be 11*l.* 14*s.* 3*d.* In dealing with the second example we write .0104 for the 23 lbs. (using Table C), and 95.500 for the 95*l.* 10*s.* Then, 95.500 × .0104 = .993, which we see at a glance represents 19*s.* 10*d.* With regard to the third example we proceed in the same way, writing 56.3750 for the 56 tons 7 cwt. 2 qrs., and .421 for (that is, 4 florins and 1 sixpence minus 4 farthings) the 8*s.* 5*d.* Then, 56.3750 × .421 = 23.734*l.*, which we find to be 23*l.* 14*s.* 8*d.* We have not shown the details of the working, so that the several examples may be worked for practice.

**TO ASCERTAIN THE VALUE OF ANY QUANTITY OF COPPER ORE (which is sold by the ton of 21 cwt.) AT ANY GIVEN PRICE.**—Rule: Multiply the quantity by the price, taking Table B for the fractional parts of a ton, and calculating mentally the fractional parts of the pound sterling. *Examples:* 1.—Prove that 13 tons 9 cwt. 3 qrs. of copper ore at 4*l.* 3*s.* 6*d.* per ton is worth 56*l.* 4*s.* 3*d.* 2.—Ascertain whether 19*l.* 16*s.* 8*d.* is too much or too little to pay for 5 tons 2 cwt. 2 qrs. of ore at 3*l.* 17*s.* 6*d.* per ton.

**TO ASCERTAIN THE VALUE OF ANY QUANTITY OF MATERIALS, WHICH ARE SOLD BY THE HUNDREDWEIGHT, AT ANY GIVEN PRICE.**—Rule: Multiply the quantity by the price, using Table D for the fractional parts of a hundredweight, and Table G for the fractional parts of a pound sterling. When the price is very low we may (instead of calculating the decimal fraction of 1*l.*) use Table F for the fractional parts of a shilling, but remember that the product will then represent shillings and fractional parts of a shilling. When tons occur in the quantity they must be turned into hundredweights before the operation is commenced; thus, 7 tons 11 cwt. 2 qrs. 14 lbs. must be called 151 cwt. 2 qrs. 14 lbs., and written 151.6250. *Examples:* 1.—Ascertain whether 2 cwt. 1 qr. 17 lbs. of gunpowder can be bought for 6*l.* 15*s.* 8*d.* when the price is 56*s.* 6*d.* per hundredweight. 2.—Prove that 7 cwt. 2 qrs. 11 lbs. of soap at 1*l.* 14*s.* 4*d.* per hundredweight can be purchased for 13*l.* 1*s.* 4*d.* Ascertain whether 286*l.* 3*s.* 5*d.* is too much to pay for 5 tons 3 cwt. 3 qrs. 25 lbs. at 2*l.* 11*s.* 2*d.* per hundredweight.

The extensive application of the decimal fraction of 1*l.* sterling will have been seen from these examples; yet these are by no means the only instances in which it can be turned to account, for with its assistance we may calculate percentages, commission, brokerage, insurance, the cost of any number of articles at any given price, the value in pounds, shillings, and pence (no matter what may be the rate of exchange) of any amount of money expressed in the currency

of a foreign country and *vice versa*, and perform numerous other arithmetical operations for obtaining results indispensable in business in considerably less time than we can obtain the desired information from a ready reckoner; but to its use for these purposes we will refer hereafter.

**TO CALCULATE THE NUMBER OF TONS OF 21 CWT. CONTAINED IN ANY NUMBER OF TONS OF 20 CWT.**—Rule 1: Write down the quantity to be converted (using Table C for the fractional parts of a ton), remove the decimal point two places to the right, and divide by 105. In the result obtained the fractional parts must be converted into hundredweights, quarters, and pounds by Table B. Rule 2: Multiply the quantity (using Table C for the fractional parts of a ton) by .9524, and treat the result as before. *Remark:* The first rule is most simple, and saves most time. *Example:* How many tons of 21 cwt. are contained in 48 tons 5 cwt. 1 qr. imperial standard weight?

150)	4826.25 (45.9643 = 45 tons 20 cwt. 1 qr.	48.2625
626		.9524
1012		
675		1930500
450		965250
300		2413125
90		4343625
		45.9652,0500

It will be seen that there is a slight difference in the result obtained by the two processes, but as the error is only 2 lbs. in nearly 50 imperial tons no great inconvenience will arise from the use of the second rule by those who prefer multiplication to division.

**TO CALCULATE THE NUMBER OF TONS OF 20 CWT. CONTAINED IN ANY NUMBER OF TONS OF 21 CWT.**—Rule: Multiply the quantity to be converted (using Table B for the fractional parts of a ton) by 1.05 and, in the product, use Table C to convert the decimals into hundredweights, quarters, and pounds. *Example:* Prove that (as copper ore is sold 21 cwt. to the ton) 45 tons 20 cwt. 1 qr. of copper ore contains 48 tons 5 cwt. 1 qr. imperial weight.

#### THE GOLD FIELDS OF THE TRANSVAAL.

Although, as already stated, the pamphlet of Mr. THOMAS RIGKARD is a mere compilation, and adds nothing to what is already known to readers of the *Mining Journal*, it will be found well worth reading by those who have invested, or are inclined to invest, in Transvaal mines. By way of summary, he states that the Lydenburg mines present two descriptions of samples, one the "poor man's material," and the other the "capitalist's," that is to say, that while there are rich samples representing limited localities wrought by the diggers like pockets, vein junctions, &c., the bulk of material upon which large operations will have to rely for returns lie quite outside, or rather cannot fairly be estimated by such "spot samples." It seems, therefore, to us to them regretted that this, in the interest of the public, has not been explained in some of the published reports and prospectuses. It is equally matter for regret that of the large capital fixed upon for the new gold mining companies, the lion's share now going into the pockets of the promoters was not reserved for developing and equipping the mines.

Why should mining, which, in its nature, is necessarily so very speculative, be made the victim of such an unbusiness-like mode of procedure? In point of fact, it is doubtful if any mine is ever good enough to be paid for in cash beyond the value of the ores actually in reserve. Promoters of gold mines seldom trouble themselves with maxims of this kind, and certainly some of them have not done so in the case of Lydenburg. Success in this instance, as in all others, on a considerable scale, is only possible as the result of large and well-considered outlay. It is also pretty safe to predict that if these new mining enterprises set out under a different impression, and make a slender provision of capital for expenditure on the ground, they will soon be landed in difficulties, and be in danger of collapse.

#### FRONTINO AND BOLIVIA GOLD MINING COMPANY.

The report of the directors prepared for presentation at the meeting on Tuesday next embodies the accounts, duly audited, for the half-year ended June, 1883. The accounts show that the profits of the six months amounted to 2050*l.*, which compares unfavourably with 4345*l.* for the corresponding half-year of 1882, being a decrease of 2295*l.*, and still more so with a profit of 9316*l.* for the half-year ended Dec. 31, 1882, being a decrease of 7266*l.* The returns of gold, including profit on exchange for the half-year under review, realised a total of 39,267*l.*, compared with a total of 39,274*l.* for the corresponding half of the previous year, being practically the same amount; but while the expenditure to June, 1882, exclusive of the amount written off for depreciation of plant, showed a total of 33,317*l.*, the like expenditure to June, 1883, was 35,790*l.*, being an excess of 2473*l.*, and thus accounting for the diminution of profit in the latter half-year.

The returns of gold, including profit on exchange for the half-year immediately preceding that under review, showed a total of 45,105*l.*, being an increase of 588*l.* over the half-year previous to that, while the expenditure was 34,111*l.*, a total of 39,274*l.* for the corresponding half of the previous year, being practically the same amount; but while the expenditure to June, 1882, exclusive of the amount written off for depreciation of plant, showed a total of 33,317*l.*, the like expenditure to June, 1883, was 35,790*l.*, being an excess of 2473*l.*, and thus accounting for the diminution of profit in the latter half-year.

According to the advice which the directors have so far received, the returns for the five months ended November last have been put at a total of 32,745*l.*, and the expenses at 29,835*l.*, showing an estimated profit of 2910*l.* By means of these accruing profits the directors declared a dividend of 1*s.* per share, which was paid on Dec. 12. The chief reasons why the returns of gold still fall below the amount anticipated are that the extensive works required for the thorough establishment of the more productive mines—the Silencio and the Salada, have taken a good deal more time to carry out than was anticipated, and that, until such works are completed and utilised, the returns from those mines are for the time being lessened both in quantity and quality.

**CABLE TRAMWAYS.**—Baroness Burdett-Coutts will open the Highgate Hill Tramway, now approaching completion. This line, which will be the first cable tramway in Europe, is being built by the Halli die Patent Cable Tramways Corporation, and is expected to be in running order next month.

LEAD ORES.				
Date.	Mines.	Tons.	Price per ton.	Purchasers.
Feb. 12—	Foxdale	110	£ 9 13 6	Panther Lead Co.
—	Liburne	40	8 7 6	Sheldon, Bush, & Co.
—	Owney	15	6 12 6	Adam Eyton and Son,
—	ditto	15	6 12 6	Quirk, Barton, & Co.
—	East Darren	25	9 18 0	Panther Lead Co.
14—	Roman Graves	150	7 0 6	Walker, Parker, & Co.
—	ditto	50	7 2 6	Adam Eyton.
—	ditto	50	7 3 0	Runcorn Company.
—	Talargoch	30	7 8 0	Walker, Parker, & Co.
—	North Hendre	50	7 15 0	Adam Eyton.
—	Rhodesmor	50	7 15 6	Walker, Parker, & Co.
—	Halkin	20	7 6 6	ditto
—	Fron Hall	12	7 7 6	Quirk, Barton, & Co.
—	Tankerville Gt. Con.	15	6 15 6	Walker, Parker, & Co.
—	ditto	15	6 15 6	Panther Lead Co.

BLENDE.				
Date.	Mines.	Tons.	Price per ton.	Purchasers.
Feb. 14—	Tankerville Gt. Con.	40	£ 4 0 6	Vivian and Sons.

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WEST DEVON GREAT CONSOLS MINE.

Notice is hereby given, that a PETITION for the WINDING-UP of the ABOVE-NAMED COMPANY by the Court was, on the 12th day of February, 1884, presented to the Vice-Warden of the Stannaries by Samuel Whitehall Mulhoney, of Midway Chambers, Bishopsgate-street, in the City of London, Merchant, a Shareholder in the said company, and that the said Petition is directed to be heard before the Vice-Warden, at the Law Institution, Chancery-lane, London, on the 5th day of March, 1884, at Two o'clock in the afternoon.

Any Contributory or Creditor of the company may appear at the hearing and oppose the same, provided he has given at least two clear days' notice to the Petitioner, his Solicitor, or agent, of his intention to do so, such notice to be forthwith forwarded to the Secretary of the Vice-Warden, R. M. PAUL, Esq., Truro, Cornwall.

Every such Contributory or Creditor is entitled to a copy of the Petition and Affidavit, verifying the same from the Petitioner, or his Solicitor, or his Agents, within 24 hours after requiring the same, on payment of the regulated charge per folio.

Affidavits intended to be used at the hearing, in opposition to the Petition, must be filed at the Registrar's Office, in Truro, or before the 1st day of March next, and notice thereof must at the same time be given to the Petitioner, his Solicitor, or his Agents.

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120 fathoms of very superior pitch pine rods, 12 and 14 inch.

210 fathoms of ½ inch galvanised wire rope, equal to new; 400 fathoms steel wire rope; two pairs of Colman's automatic jiggling machines, complete.

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For descriptive particulars see Posters. And any further information may be obtained from Capt. GILBERT, the Manager; or from the Auctioneer, 4, Station Hill, Redruth.—Dated Jan. 29th, 1884.

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Also a complete apparatus for washing slack, and fittings for 24 coke ovens, including engine, boilers, pumps, tanks, troughs, steam and water piping, tram rails, iron slack stoppers, &c., &c.

Also some 20,000 to 30,000 tons of well-tempered first-class FIRE-CLAY. To be offered in lots, of quantities to suit buyers.

Catalogues may be had at the leading Hotels at Oswestry, Wrexham, and Rubon; and on application to Messrs. J. P. and J. T. BUTCHER, Solicitors, Hebbden Bridge; Messrs. WALKER, SMITH, and WAT, Solicitors, Ouseley; Messrs. THOMAS, WADE, GUTHRIE, and Co., Chartered Accountants, 32, Brown-street, Manchester; or to the Auctioneer, at his offices, Salop-road, Oswestry.

**ON SALE (CHEAP), TO CLEAR THE GROUND, GARSWOOD PARK AND LAFFAK-GARSWOOD COLLIERIES, ST. HELENS, LANCASHIRE.**

THE ABOVE COLLIERIES, belonging to Messrs. David Bromilow and Co., being worked out, the WHOLE OF THE PLANT IS NOW OFFERED FOR SALE, BY PRIVATE TREATY, and consists of—

ONE SINGLE HORIZONTAL WINDING ENGINE, 31 in. cylinder, Cornish valves, 5 ft. 6 in. stroke, and 12 ft. drum for round ropes, and steam brake, by Robinson and Cook.

HORIZONTAL ENGINE, 24 in. cylinder, piston valve, 4 ft. stroke, 16 ft. fly-wheel, spur wheels for pumping, 3 to 1 pumping wheel, 14 ft. diameter, dice slide, rod, and L leg, by Coupe Brothers.

HORIZONTAL ENGINE, 18 in. cylinder, slide valve 4 ft. stroke, 12 ft. fly-wheel, spur wheel 9 in. on face, single pumping crank 10 in. square, 4 ft. stroke, slide rod, L leg.

HORIZONTAL ENGINE, 14 in. cylinder, slide valve 24 in. stroke, fly wheel, 9 ft. spur wheel and drum.

ONE PAIR HORIZONTAL WINDING ENGINES, 21 in. cylinders, 4 ft. stroke, slide valves, with 9 ft. drum for round ropes.

Also, BOILERS, and several other SMALL ENGINES, LOCOMOTIVE, MACHINERY, LATHES, PLANING and DRILLING MACHINES, TURNING and FITTING TOOLS, several large and small SAW BENCHES, THREE HUNDRED AND FORTY 8 and 3 ton WAGONS, NINETEEN RIVER FLATS (rigged), and about 2500 tons of good CANEAL, &c., &c.

For catalogue and further particulars, apply to D. BROMILOW and Co., Garswood Park Colliery, St. Helens, Lancashire.

**OILGWYN SLATE QUARRY,**  
CARMARVONSHIRE.

TO BE SOLD, BY PRIVATE TREATY (owing to the death of the principal Partner), this well-known QUARRY, which is held under a Crown lease, is considered to be the best Slate Quarry owned by the Crown. The rock is known to be of the finest and purest description, and has hitherto been worked at a large profit.

There is a large quantity of PLANT, including inclines, five fixed steam-engines and three locomotives.

The surviving partners will either join in a sale of the whole, or retain their interest as they may be arranged.

Present proprietors have worked it since 1849.  
Further information may be obtained from—  
J. H. ROBERTS and THOMAS, Solicitors, 10, Castle-street, Carmarvon.

**FOR SALE, A RARE AND IMPORTANT COLLECTION OF**  
MINERAL SPECIMENS, consisting of Gold, Silver, Copper, Tin, Lead, Iron, Bismuth, Nickel, Mercury, Cobalt, Antimony, and other ores and sundry specimens. Each specimen located. Collected in different parts of Europe, Asia, Africa, North and South America.

Also a Mahogany Box containing Blow-pipe Apparatus, Chemical re-agents, &c., &c. It cost 15 guineas, and has never been used. A second-hand Gold Assay Balance and Weights, and a Collection of Home and Foreign Gold, Copper, and Silver Coins, and other curiosities.

May be seen on application to CHARLES F. BRAY, Mining Engineer, 40, Coxwell-road, Ladywood, Birmingham.

**STEAM BOILERS FOR SALE, SECONDHAND, with and without Galloway Tubes, single and double riveted, working pressure of 60 lbs., 65 lbs., 70 lbs., and 80 lbs. steam pressure. VERY CHEAP.**

FIVE BOILERS, 30 feet by 7 feet 6 inches diameter excellent order.

SIX BOILERS, 30 feet by 7 feet Galloway Tubes, "

FOUR BOILERS, 28 feet by 7 feet "

THREE BOILERS, 25 feet by 7 feet "

FOUR BOILERS, 24 ft. by 6 ft. 6 in. "

And other sizes in stock. Equal to new.

WINDING ENGINES and COLLIERY PLANT of every description, second-hand, in stock. VERY CHEAP. Write to—

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ROYAL EXCHANGE, MANCHESTER.

**ARMY CONTRACTS.****COAL AND KINDLING WOOD.**

**TENDERS for the SUPPLY of COAL and KINDLING WOOD**  
for MILITARY SERVICES, for Twelve Months, from the 1st April, 1884, will be received until Twelve o'clock noon, on WEDNESDAY, the 27th day of February, 1884, by the Commissariat Officers in charge of the undermentioned districts—

<b>NORTH BRITAIN DISTRICT</b> .....	Commissariat Office, 1, Castle Terrace, Edinburgh.
<b>NORTHERN DISTRICT</b> .....	Commissariat Office, Fishergate, York.
<b>WESTERN DISTRICT</b> .....	Commissariat Office, 38, George Street, Devonport.
<b>SOUTHERN DISTRICT</b> .....	Commissariat Office, Colewort Barracks, Portsmouth.
<b>SOUTH-EASTERN DISTRICT</b> .....	Commissariat Office, 10, Esplanade, Dover.
<b>CHATHAM DISTRICT</b> .....	Commissariat Office, The Barracks, Chatham.
<b>WOOLWICH DISTRICT</b> .....	Commissariat Office, Royal Artillery Barracks, Woolwich.
<b>EASTERN DISTRICT</b> .....	Commissariat Office, Abbey Field, St. John's Green, Colchester.
<b>HOME DISTRICT</b> .....	Commissariat Office, Horse Guards, Whitehall, London.
<b>ALDERSHOT</b> .....	Commissariat Office, South Camp, Aldershot.

**CHANNEL ISLANDS.**

<b>ALDERNEY</b> .....	Commissariat Office, Alderney.
<b>GUERNSEY</b> .....	Commissariat Office, Guernsey.
<b>JERSEY</b> .....	Commissariat Office, Jersey.

Forms of Tender, and Conditions of Contract (showing approximate quantities) may be obtained on application at the above-named Commissariat Offices, be letter addressed to the Senior Commissariat Officer, or in person between the hours of Ten and Four o'clock, and no Tender will be entertained unless made upon the Form so obtained.

The Tenders must be properly filled up, signed, and dated; and no Tenders will be noticed unless delivered in time at the above-named District Offices, under closed envelope, marked "Tender" on the outside.

EVAN COLVILLE NEPEAN, Director of Army Contracts.

Army Contract Department, War Office, Pall Mall, S.W.

5th February, 1884.

**FOR SALE, the LLANHILLETH COLLIERY, the property of**  
HENRY POWELL, Esq., situate on the Western Valleys Branch of the Great Western Railway.

The situation of this property is in one of the best positions in Monmouthshire, within 13 miles of Newport, the port of shipment, and commands a large area of minerals, both the Bituminous and the Steam Coal Measures. The colliery is now in full work on the House Coal Measures.

There is also a pit sunk about 80 yards, fitted with very powerful pumping and winding engines and gear, suitable for winning and working the Steam Coal, a very large area of which, although not already taken, can be secured on very favourable terms.

For full particulars, apply to Messrs. BROWN and ADAMS, Guildhall Chambers, Cardiff; and to view the Colliery, to Mr. JEREMIAH, Llanhilleth Colliery, Crumlin, near Newport, Monmouthshire.

**FOR SALE, the PATENTS of VALUABLE INVENTIONS of**  
the NEWEST PROCESS for IMPROVING, HARDENING, SOFTENING, EXAMINING, and WELDING STEEL and IRON.

The above process has hitherto been introduced in Germany and Switzerland only, and obtained numerous testimonials from the most important Establishments and Government Authorities; also two first-class diplomas: 30 per cent. net profit, at least, result in the manufacturing. No competition.

For further particulars, apply by letter, in first instance, to "T. 94," care of Rudolf Mosse, Zurich, Switzerland.

**TO BE LET, a MINE in the Province of HUELVA, SPAIN.** It is situated seven miles from the Tharsis Mines, and promises to yield good copper ore. Is advantageously situated, the surrounding country being of little value, and water is abundant close by.

The mineralised outcrop is about 60 metres wide, and 600 metres long, in which are visible several gossan lodes. In the sett is another gossan lode over 300 metres long and a metre wide.

For particulars, apply to "Miner," MINING JOURNAL Office, 26, Fleet-street, E.C.

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10-H.P. double cylinder PORTABLE ENGINES, by CLAYTON and SHUTTLEWORTH.

10-H.P. TRACTION ENGINE.

TWO 12-H.P. TRACTION ENGINES, with WINDING DRUMS.

8-H.P. TRACTION ENGINE, with WINDING DRUMS.

The above Engines, all in good condition, are FOR SALE, and can be seen on application to—  
J. and F. HOWARD, BRITANNIA IRONWORKS, BEDFORD.

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**FOR SALE, a PLANT of ROCK-DRILLING MACHINERY**  
quite new, comprising—  
ONE AIR-COMPRESSING ENGINE, with 12 inch cylinders, 3 and 3½ in. rock drills, stretcher bars, &c., &c. Our Machines have been driving levels in hard rock 3 to 4 fathoms per week forward. Contracts undertaken.

Address—WARSON and HILL, NOTTINGHAM.

**PIT SINKING, WINDING COAL, PUMPING, &c.**  
**PORTABLE STEAM ENGINE FOR SALE, with two 9½ inch**  
cylinders, and link motion reversing gear also gear to wind and pump.

A 9-H.P. VERTICAL STEAM ENGINE, with link motion reversing gear (winding drum if required).

A 6 ft. pan MORTAR MILL, VERTICAL ENGINE, and BOILER combined, on carriage and travelling wheels.

Apply to—  
BARROWS and STEWART, ENGINEERS, BANBURY.

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GUAYANA, VENEZUELA.  
32,200 SHARES.

Gold in bars produced in the month of December, 1883, remitted to Messrs. Baring Brothers and Co., London—12,986 56 ozs.

DIVIDEND distributed for each share, 24 francs.

(Signed) A. IRE. CAGNINACCI, Vice-President.  
(Signed) VICTOR T. GRILLET, Treasurer.

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COMPANY.

The Subscriber is desirous of opening communication with some party in England for the purpose of organising the above company. One thousand shares of red hematite ore not far from the line of the C. P. R.

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**UNITED MEXICAN MINING COMPANY**  
(LIMITED).

Notice is hereby given, that a GENERAL MEETING of the company will be HELD on MONDAY, the 3rd day of March, 1884, at Twelve o'clock at noon, at the Guildhall Office House, Gresham-street, London, for the purpose of considering proposed alterations in the capital of the company and of passing resolutions to the effect of the resolutions set forth at the foot of this notice; with the intent that the resolutions passed at the meeting may be confirmed at a subsequent meeting, and become special resolutions of the company.

The Transfer Books will be closed on the afternoon of the 22nd instant, and reopened on the day succeeding the meeting.

By order, W. M. BROWNE, Secretary.  
3, Great Winchester-street Buildings, London, E.C.  
Dated this 15th day of February, 1884.

**PROPOSED RESOLUTIONS.**

I.—That Clause 6 of the Company's Articles of Association



# NOBEL'S DYNAMITE



Manufactured and sold by  
**NOBEL'S EXPLOSIVES COMPANY, LIMITED**  
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IS RECOMMENDED TO CONTRACTORS, MINERS, PIT SINKERS, QUARRYMEN, AND OTHERS, AS BEING THE SAFEST, CHEAPEST, AND STRONGEST OF ALL EXPLOSIVES

TONITE is the most efficient and economical blasting agent ever invented, and is largely in demand. It does not contain any Nitro-glycerine, and is, therefore, exempt from the dangers of exudation, or of freezing and its attendant process of thawing.

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of a quality much superior to the foreign article. Also supply Safety Fuse and Electric Firing Appliances of best description. The trade supplied on favourable terms.

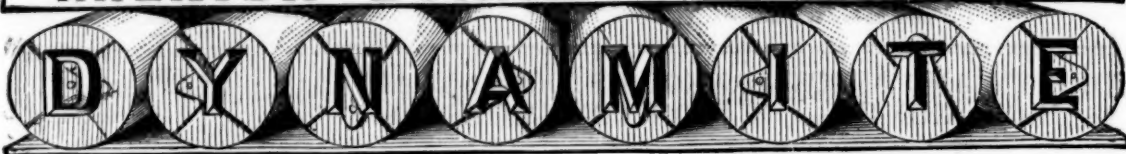
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## DYNAMITE

Of the HIGHEST DESCRIPTION, and of the maximum strength allowed by the British Explosives Act (75 per cent. Nitroglycerine).

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No implements required for opening inner tin box, thereby avoiding any danger arising from opening same with tools, as generally used.

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of Engines.



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PUMPING and other LAND ENGINES and MARINE STEAM ENGINES  
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HUSBAND'S PATENT PNEUMATIC STAMPS

SECOND-HAND MINING MACHINERY FOR SALE,  
In Good Condition, at Moderate Prices—viz.

PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES,  
STEAM CAPSTANS; ORE CRUSHERS; BOILERS and FITWORK of  
various sizes and descriptions; and all kinds of MATERIALS required for  
MINING PURPOSES.



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RANKIN, BRAYTON, AND CO.,

For Copper and Argentiferous Galena Ores.

GENERAL OFFICE AND WORKS,

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The Pacific Water Jacket Smelters embrace many features that are entirely new and of great practical utility, which are secured by letters patent.

No other furnaces can compare with these for durability, and in capacity for continuous and interrupted work.

More than One Hundred

of them are now running in the various mining districts of the United States, giving results never before obtained as regards continuous running, economy of fuel grade and quality of bullion produced.

These Smelters are shipped in a complete state, requiring no brick or stone work, thus saving great expense and loss of time in construction.

Complete smelting plants made to order, with all the improvements that experience has proved valuable in this class of machinery. Skilled and experienced smelters furnished when desired to examine mines and to superintend constructing and running of furnaces. Estimates given upon application. Send for circular.

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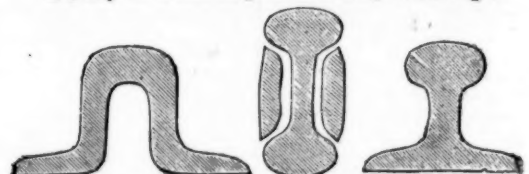
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IRON AND STEEL RAILS, of all sections, from 10 to 86 lbs. per yard, new perfect, new slightly defective, or second-hand, with Fish-plates, Bolts and Nuts, Chairs, Spikes, and Points and Crossings to match, when required.

STEEL AND IRON WIRE ROPES, LOCOMOTIVE ENGINES, &c., &c.

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STEEL OF ALL KINDS. PIG IRON OF ALL KINDS

Delivered at all Railway Stations and Ports in Great Britain.

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SAFETY FUSE

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This manufacture embraces all the latest improvements for use in Blasting in Mines, Quarries, or for Submarine Purposes and is adapted for exploding Gunpowder, Dynamite, or any other Explosive; and is made suitable for exportation to any part of the world. Price Lists and Sample Cards on application.

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CALIFORNIAN AND EUROPEAN AGENCY.

509, MONTGOMERY STREET, SAN FRANCISCO, CAL.

J. JACKSON, Manager



## THE MINING SHARE LIST.

## BRITISH DIVIDEND MINES.

Shares.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
3200 Blue Hills, s. St. Agnes	4 18	6...	3 1/4	0 4	0 0	0 0 May 1881
4000 Carn Brea, s. St. Agnes	12 12	11...	3 1/4	0 11	0 0	0 0 Nov. 1881
4000 Carn Breva, s. St. Agnes	5 0	0...	—	0 5	0 0	0 0 Nov. 1882
10240 Devon Gt. Consols, s. St. Agnes	1 0	0...	3 1/4	118 7	0 0	0 0 Dec. 1883
4700 Dolcoath, s. St. Agnes	10 14	10...	62 1/2	59 61	0 0	0 0 Dec. 1883
4000 East Pool, s. St. Agnes	0 0	0...	—	35 37 1/2	0 0	0 0 Dec. 1883
12000 Great Holway, s. St. Agnes	0 0	0...	—	0 12	0 0	0 0 Sept. 1883
15000 Great Laxey, s. St. Agnes	0 0	0...	—	0 10	0 0	0 0 Dec. 1883
4000 Green Hurth, s. St. Agnes	0 0	0...	—	0 10	0 0	0 0 Dec. 1883
9300 Gunwalloe (Clitters), s. St. Agnes	2 2	0...	1 1/4	0 19	0 0	0 0 Sept. 1883
2000 Isle of Man, s. St. Agnes	25 0	0...	—	0 3	0 0	0 0 Sept. 1883
4000 Killfret, s. St. Agnes	4 3	0...	3 1/4	0 5	0 0	0 0 Sept. 1883
2000 Leadhills, s. St. Agnes	15 15	0...	2 1/2	0 15	0 0	0 0 Sept. 1883
4000 Leeburn, s. St. Agnes	2 0	0...	2 1/4	0 1 1/2	0 0	0 0 Jan. 1884
10000 Mellanor, s. St. Agnes	2 0	0...	2 1/4	0 6 1/2	0 0	0 0 Jan. 1884
9000 Miners Mining Co., s. St. Agnes	2 0	0...	—	0 24	0 0	0 0 Jan. 1884
20000 Mining Co. of Ireland, s. St. Agnes	2 0	0...	—	0 31	0 0	0 0 Jan. 1884
11820 North Hendre, s. St. Agnes	2 0	0...	—	0 11	0 0	0 0 Jan. 1884
4140 Ditto	1 5	0...	—	0 41	0 0	0 0 Jan. 1884
2000 North Levant, s. St. Agnes	13 0	0...	—	0 17	0 0	0 0 Jan. 1884
4760 Penhaliga, s. St. Agnes	4 0	0...	3 1/4	0 11	0 0	0 0 Jan. 1884
12000 Roman United, s. St. Agnes	7 10	0...	3 1/4	0 11	0 0	0 0 Jan. 1884
6120 South Condurrow, s. St. Agnes	7 10	0...	3 1/4	0 11	0 0	0 0 Jan. 1884
9000 South Daren, s. St. Agnes	1 10	0...	3 1/4	0 11	0 0	0 0 Jan. 1884
20000 Tincroft, s. St. Agnes	13 12	0...	3 1/4	0 25	0 0	0 0 Jan. 1884
15000 Van, s. St. Agnes	13 12	0...	3 1/4	0 25	0 0	0 0 Jan. 1884
15000 West Holway, s. St. Agnes	7 10	0...	3 1/4	0 25	0 0	0 0 Jan. 1884
2000 West Bassett, s. St. Agnes	0 12	0...	3 1/4	0 19	0 0	0 0 Nov. 1883
6000 West Killy, s. St. Agnes	2 4	0...	3 1/4	0 1 1/2	0 0	0 0 Nov. 1883
12000 Wheel Crebor, s. St. Agnes	2 4	0...	3 1/4	0 1 1/2	0 0	0 0 Nov. 1883
10240 Wheel Eliza Consols, s. St. Agnes	18 0	0...	3 1/4	0 5 1/2	0 0	0 0 Dec. 1883
6000 Wheel Grenville, s. St. Agnes	15 0	0...	3 1/4	0 12 1/2	0 0	0 0 Jan. 1884
4250 Wheel Killy, s. St. Agnes	13 1	0...	3 1/4	0 13	0 0	0 0 Mar. 1881
3000 Wheel Pevor, s. St. Agnes	13 1	0...	3 1/4	0 13	0 0	0 0 Mar. 1881

## FOREIGN DIVIDEND MINES

Shares.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
35000 Alamillos, s. Spain	2 0	0...	1 1/4	0 213	0 0	0 0 Sept. 1883
130000 Almada and Tinto Consol., s. Spain	1 0	0...	1 1/4	0 0	0 0	0 0 May 1878
20000 Australian, s. South Australia	7 7	0...	1 1/4	0 1	0 0	0 0 Jan. 1884
15000 Birdseye Creek, s. California	2 0	0...	1 1/4	0 2	0 0	0 0 Jan. 1884
30000 Bratsberg, s. Norway	1 0	0...	1 1/4	0 2	0 0	0 0 Aug. 1883
130000 California, s. California	2 0	0...	1 1/4	0 2	0 0	0 0 Aug. 1883
20000 Cape Copper Mining, s. South Africa	5 0	0...	45	0 55	0 0	0 0 Dec. 1883
65000 Colorado United, s. Colorado	5 0	0...	2 1/4	0 14	0 0	0 0 May 1883
50000 Copiapo, s. Chile	2 10	0...	3 1/4	0 24	0 0	0 0 Dec. 1883
70000 English & Australian, s. St. Aust.	2 10	0...	3 1/4	0 24	0 0	0 0 Dec. 1883
20000 Fortuna, s. Spain	2 0	0...	3 1/4	0 24	0 0	0 0 Dec. 1883
20000 Frontino & Bolivia, s. New Gran.	2 0	0...	3 1/4	0 12	0 0	0 0 Dec. 1883
270000 Henrietta, s. Leadville, Colorado	1 0	0...	3 1/4	0 0	0 0	0 0 Feb. 1883
200000 La Plata, s. Leadville, Colorado	2 0	0...	3 1/4	0 12	0 0	0 0 Oct. 1882
50000 Linars, s. Spain	3 0	0...	3 1/4	0 10	0 0	0 0 Sept. 1883
200000 Marbella Iron Ore, s. Spain	10 0	0...	3 1/4	0 10	0 0	0 0 Oct. 1883
185184 Mason & Barry, s. Portugal	10 0	0...	3 1/4	0 10	0 0	0 0 Oct. 1883
800000 Quebec, s. Canada	10 0	0...	3 1/4	0 10	0 0	0 0 Oct. 1883
500000 Panguit, s. Brazil	10 0	0...	3 1/4	0 10	0 0	0 0 Oct. 1883
14000 Pontgibaud, s. France	20 0	0...	3 1/4	0 30	0 0	0 0 Sept. 1883
1000000 Port Phillip, s. Victoria	1 0	0...	3 1/4	0 0	0 0	0 0 July 1882
500000 Rara Fortuna, s. Argentina	1 0	0...	3 1/4	0 0	0 0	0 0 July 1882
540000 Richmond Consol., s. Argentina	1 0	0...	3 1/4	0 0	0 0	0 0 July 1882
24532 Rio Tinto, s. Portugal	10 0	0...	3 1/4	0 100	0 0	0 0 July 1882
325000 Ditto, shares	10 0	0...	3 1/4	0 100	0 0	0 0 July 1882
40000 Santa Barbara, s. Brazil	10 0	0...	3 1/4	0 10	0 0	0 0 May 1882
1200000 Scottish-Australian Mining Co., s. Australia	1 0	0...	3 1/4	0 0	0 0	0 0 Nov. 1883
800000 Ditto, New	10 0	0...	3 1/4	0 10	0 0	0 0 Oct. 1883
22500 Sierra Butte, s. California	2 0	0...	3 1/4	0 3	0 0	0 0 Oct. 1883
400000 Ditto, Flumina Eureka	2 0	0...	3 1/4	0 3	0 0	0 0 Oct. 1883
253000 St. John del Rey, s. Spain	1 0	0...	3 1/4	0 75	0 0	0 0 June 1882
180000 Tambora, s. Wynaad	1 0	0...	3 1/4	0 0	0 0	0 0 Aug. 1882
825000 Tharsis, s. Spain	2 0	0...	3 1/4	0 6	0 0	0 0 May 1883
200000 Tolima, s. Colombia	2 0	0...	3 1/4	0 7	0 0	0 0 May 1883
200000 Victoria (London), s. Australia	1 0	0...	3 1/4	0 0	0 0	0 0 June 1882
1000000 Victoria (Nevada), s. Nevada	1 0	0...	3 1/4	0 0	0 0	0 0 Oct. 1883
150000 Western Andes, s. Colombia	5 0	0...	3 1/4	0 5 1/2	0 0	0 0 Oct. 1883
2100 W. Prussian (5500 pref. sh. £10 pd.)	10 0	0...	3 1/4	0 7 1/2	0 0	0 0 Apr. 1881
44000 York Fen, s. South Aust. Pref.	1 0	0...	3 1/4	0 0	0 0	0 0 Aug. 1882

Have made calls since last dividend was paid.

## NON-DIVIDEND BRITISH MINES.

Shares.	Paid.	Last wk.	Clos. pr.
250000 Aberdun, s. Denbigh	1 10	0...	1 1/4
12000 Anderton, s. Denbigh	1 2	0...	1 1/4
12000 Asheton, s. Denbigh	1 2	0...	1 1/4
12000 Bedford Unit, s. Denbigh	0 14	0...	1 1/4
30000 Bodidris, s. Denbigh	1 0	0...	1 1/4
10000 Brada, s. Denbigh	1 0	0...	1 1/4
30000 British, s. Denbigh	1 0	0...	1 1/4
20000 British Manganese Company	1 0	0...	1 1/4
30000 Buono Consol., s. Flintshire	1 0	0...	1 1/4
20000 Bwlch United, s. Flintshire	1 0	0...	1 1/4
12000 Collacombe Consols, s. Flintshire	0 2	0...	1 1/4
50000 Carn Camborne, s. Cornwall	1 0	0...	1 1/4
37500 Carnarvonshire Cons., s. Cornwall	2 0	0...	1 1/4
6400 Oshwell, s. Cumberland	2 19	0...	1 1/4
6000 Oshwell, s. Cornwall	1 6	0...	1 1/4
20000 Central Foxdale, s. Isle of Man	1 17	0...	1 1/4
25000 Coed-y-Fedw & Pant-y-Buarth, s. Isle of Man	1 0	0...	1 1/4
24500 Cook's Kitchen, s. Flintshire	33 14	0...	1 1/4
10000 Cornwall Great Cons., s. Cornwall	1 0	0...	1 1/4
30000 Creigiau, s. Denbighshire	0 17	0...	1 1/4
6400 Crook Burn, s. Denbighshire	0 17	0...	1 1/4
48720 D'Esby Mountain, s. Denbighshire	0 10	0...	1 1/4
12000 Derwent, s. Durham	4 0	0...	1 1/4
60000 Devon Friendship, s. Devon	1 0	0...	1 1/4
12000 Devon Great United, s. Devon	1 17	0...	1 1/4
50000 Drake, s. Devon	0 15	0...	1 1/4
50000 Duchy Peru, s. Cornwall	1 0	0...	1 1/4
12000 East Blue Hills, s. St. Agnes	0 5	0...	1 1/4
6000 East Botallack, s. St. Agnes	1 0	0...	1 1/4
6144 East Caradon, s. St. Agnes	4 19	0...	1 1/4
4000 East Chilverton, s. Pannabuloe	10 17	0...	1 1/4
15000 E. Craven Moor, s. Pannabuloe	1 0	0...	1 1/4
20000 East Long Rake, s. Wales	1 0	0...	1 1/4
25500 East Roman Gravel, s. Salop	1 0	0...	1 1/4
18000 East Van, s. Llanidloes	5 0	0...	1 1/4
2048 East Wheel Lovell, s. Helston	13 13	0...	1 1/4
100000 East Wheel Rose, s. Helston	1 0	0...	1 1/4
12000 E. W. & W. Consol., s. Cornwall	1 0	0...	1 1/4
12500 Frongoch, s. Cornwall	2 0	0...	1 1/4
12000 Ganton, s. Tavistock	2 0	0...	1 1/4
40000 Glas. Car. (30000 sh. £1 pd., 10000 15a. pd.)	0 10	0...	1 1/4
30000 Gobbett, s. Devon	1 0	0...	1 1/4
10000 Gogginan, s. Cornwall	1 0	0...	1 1/4
30000 Gogginan, s. Cornwall	1 0	0...	1 1/4
8500 Gorsead & Merilyn Consol., s. Flintshire	2 10	0...	1 1/4
20000 Great Dylliff (10000 sh. issued)	1 0	0...	1 1/4
6000 Great West Chilverton, s. St. Agnes	0 6	0...	1 1/4
20000 Grogwinion, s. Cardigan	0 6	0...	1 1/4
10000 Gwyn-y-Mynydd, s. Flint (pref.)	4 0	0...	1 1/4
70000 Gwyllfar Anal, s. Cornwall	1 0	0...	1 1/4
9400 Hardhine, s. Westmore	0 2	0...	1 1/4
12000 Herodsfoot, s. near Liskeard	1 6	0...	1 1/4
18000 Hingston Down, s. Cornwall	0 13	0...	1 1/4
35000 Holway Consol., s. Flintshire	1 0	0...	1 1/4
25000 Kit Hill Gt. Cons., s. Cornwall	1 2	0...	1 1/4
15000 Lady Ann, s. Llanharmon	1 0	0...	1 1/4
25000 Landegla, s. Wales	0 10	0...	1 1/4
5120 Lovell, s. Wendron	0 16	0...	1 1/4
9000 Marke Valley, s. Llanharmon	7 11	0...	1 1/4
6000 Medlyn Moor, s. Wendron	3 15	0...	1 1/4
8000 Mona, s. Anglesea	5 0	0...	1 1/4
20000 Mona Consol., s. Anglesea	1 0	0...	1 1/4
15000 Monkstoun, s. Devon	2 0	0...	1 1/4
20000 Moorland Consol., s. Flint	2 0	0...	1 1/4
12000 Morris Du, s. Anglesea	1 0	0...	1 1/4
20000 Mounts Bay, s. Breage	1 0	0...	1 1/4
6144 Mount Carbis, s. Redruth	15 0	0...	1 1/4
12000 New Caradon, s. St. Agnes	0 5	0...	1 1/4
2400 New Cook's Kitchen, s. Flint	9 13	0...	1 1/4
8000 New Cornwall, s. Cornwall	3 0	0...	1 1/4
10000 New Cornwall, s. Cornwall	3 0	0...	1 1/4
8000 New Killy, s. St. Agnes	1 2	0...	1 1/4
15000 New Redmoor, s. Cardigan	1 5	0...	1 1/4
17500 New Terras, s. St. Austell	1 0	0...	1 1/4
3500 New Tincroft, s. Lelant	6 0	0...	1 1/4
12000 New Trumpet, s. Wendron	1 0	0...	1 1/4
30000 New Van, s. Cornwall	7 0	0...	1 1/4
12000 New West Caradon, s. Liskeard	0 8	0...	1 1/4
3000 New Wheel Pevor, s. Redruth	0 10	0...	1 1/4
5320 North Blue Hills, s. St. Agnes	0 2	0...	1 1/4
10000 North Busy, s. St. Agnes	1 19	0...	1 1/4
10000 N. D'Esby Mount, s. Denbigh	1 0	0...	1 1/4
25000 North Gogginan, s. Cornwall	1 0	0...	1 1/4
8400 North Green Hurth, s. Cornwall	0 2	0...	1 1/4
25000 North Grogwinion, s. Cardigan	0 2	0...	1 1/4
12000 North Herodsfoot, s. Liskeard	0 13	0...	1 1/4

## NON-DIVIDEND MINES—continued.

Shares.	Paid.	Last wk.	Clos. pr.
50000 North Molton, s. Devon	1 0	0	1 1/4
8000 North Penstruthal, s. Cornwall	1 0	0	1 1/4
2936 North Trekerby, s. St. Agnes	1 0	0	1 1/4
8000 Northern, s. Durham	8 17	0	1 1/4
40000 Okei Tor, s. Cornwall	1 0	0	1 1/4
80000 Old Shepherds, s. Cornwall	1 0	0	1 1/4
60000 Owen Ven & Tregur, s. Cornwall	1 0	0	1 1/4
45000 Parys Corporation, s. Anglesea	1 0	0	1 1/4
7500 Pateley Bridge, s. Yorkshire	4 7	0	1 1/4
6000 Pedn-an-drea, s. Redruth	5 0	0	1 1/4
6000 Pennant, s. Cornwall	5 0	0	1 1/4
20000 Penryn, s. Cornwall	1 0	0	1 1/4
15000 Pen-y-Orsedd, s. Flintshire	1 0	0	1 1/4
12000 Perran Consols, s. Cornwall	1 0	0	1 1/4
10000 Polberr, s. St. Agnes	0 2	0	1 1/4
6000 Polcorro, s. Cornwall	0 16	0	1 1/4
4516 Polrose, s. Cornwall	1 12	0	1 1/4
10000 Port Nigel, s. Cornwall	0 15	0	1 1/4
12000 Port Patrick, s. Cornwall	1 0	0	1 1/4
12000 Prince of Wales, s. Cornwall	1 0	0	1 1/4
30000 Russell United, s. Tavistock	0 15	0	1 1/4
30000 Silver Hill, s. Callington	0 15	0	1 1/4
50000 Sinclair, s. St. Agnes	1 0	0	1 1/4
40000 Sortridge, s. Cornwall	1 0	0	1 1/4
50000 South Caradon, s. St. Agnes	1 0	0	1 1/4
6000 South Carbis, s. Redruth	0 10	0	1 1/4
40000 So. Devon Unit, s. Cornwall	1 0	0	1 1/4
6000 South Dolcoath, s. Cornwall	0 10	0	1 1/4
30000 So. Phoenix & Caradon, s. Cornwall	1 0	0	1 1/4
6000 South Tolcarne, s. Cornwall	5 11	0	1 1/4
2043 South West Croft, s. Cornwall	5 19	0	1 1/4
6000 South West Croft, s. Cornwall	5 19	0	1 1/4
40000 Tamar, s. Cornwall	1 0	0	1 1/4
110000 Tavistock Hill, s. Cornwall	1 0	0	1 1/4
12000 Trebarnish Limestone, s. North Hill	0 6	3	1 1/4
50000 Trebarnish Limestone, s. North Hill	0 6	3	1 1/4
50000 Trebarnish Limestone, s. North Hill	0 6	3	1 1/4
50000 Trebarnish Limestone, s. North Hill	0 6	3	1 1/4
100000 Trebarnish Limestone, s. North Hill	0 6	3	1 1/4
60000 Trebarnish Limestone, s. North Hill	0 6	3	1 1/4
8000 Trebarnish Limestone, s. North Hill	0 6	3	1 1/4
10000 Vaughan, s. Cornwall	10	0	1 1/4
50000 Weardale, s. Northumberland (4 shares)	1 2	6	1 1/4
12000 West Caradon, s. St. Agnes	1 0	0	1 1/4
12000 West Caradon, s. St. Agnes	1 0	0	1 1/4
30000 West Caradon, s. St. Agnes	0 9	3	1 1/4
30000 West Caradon, s. St. Agnes	0 9	3	1 1/4
12000 West Caradon, s. St. Agnes	0 9	3	1 1/4
12000 West Caradon, s. St. Agnes	0 9	3	1 1/4
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